August 1916 GENERAL RAILWAY SIGNAL COMPANY

Relay Boxes

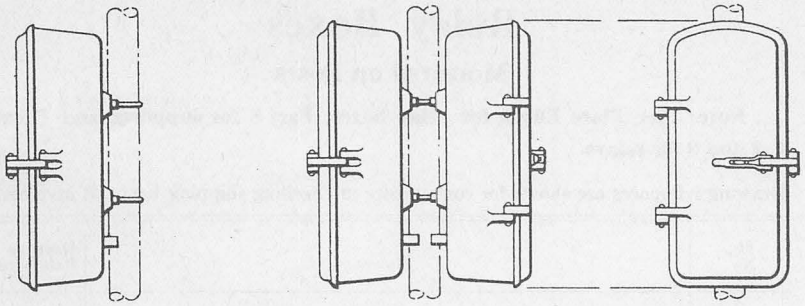
Mounted on Posts

Note: See Plate E0905 for relay boxes, Part 8 for supports, and Parts 1, 2 and 3 for relays.

Drawing references are shown for convenience in checking shipping lists and invoices.

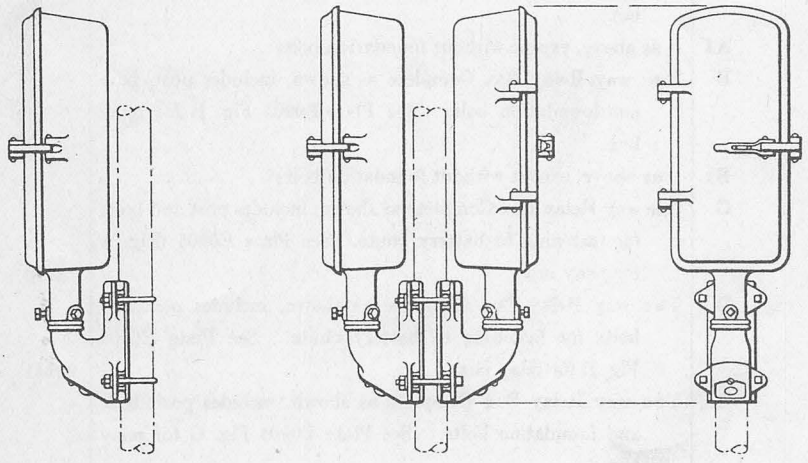
Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	One way Relay Box Complete as shown, includes post, base and foundation bolts. See Plate E0905 Fig. A for relay box	
A1	as above, except without foundation bolts	
B	Two way Relay Box Complete as shown, includes post, base and foundation bolts. See Plate E0905 Fig. B for relay box	
B1	as above, except without foundation bolts	
C	One way Relay Box Complete as shown, includes post and bolts for fastening to battery chute. See Plate E0905 Fig. A for relay box	28240
D	Two way Relay Box Complete as shown, includes post and bolts for fastening to battery chute. See Plate E0905 Fig. B for relay box	28241
E	Two way Relay Box Complete as shown, includes post, base and foundation bolts. See Plate E0905 Fig. G for relay box	
E1	as above, except without foundation bolts	
F	Two way Relay Box Complete as shown, includes post and bolts for fastening to battery chute. See Plate E0905 Fig. G for relay box	
G	Four way Relay Box Complete as shown, includes post, base and foundation bolts. See Plate E0905 Fig. F for relay box	
G1	as above, except without foundation bolts	
H	Four way Relay Box Complete as shown, includes post and bolts for fastening to battery chute. See Plate E0905 Fig. F for relay box	

PLATE E0903



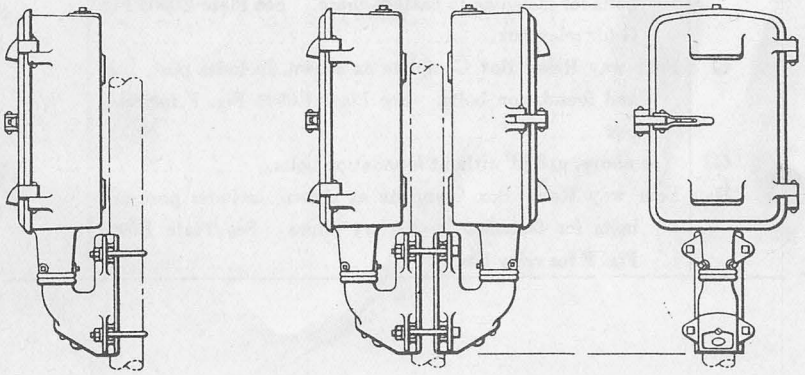
A – FOR ONE RELAY
B – FOR TWO RELAYS
C – FOR THREE RELAYS

D – FOR FOUR RELAYS
E – FOR SIX RELAYS



F – FOR ONE RELAY
G – FOR TWO RELAYS
H – FOR FOUR RELAYS

J – FOR FOUR RELAYS
K – FOR EIGHT RELAYS



M – FOR TWO RELAYS

N – FOR FOUR RELAYS

Relay Boxes with Brackets and Bolts for Mounting

August 1916 GENERAL RAILWAY SIGNAL COMPANY

Relay Boxes

With Brackets and Bolts for Mounting

Note: See Plate E0905 for relay boxes, Part 8 for supports, and Parts 1, 2 and 3 for relays.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	One way Relay Box Complete as shown, for fastening to 3″, 4″, 5″ or 6″ pipe. Includes blank terminal board, bushing for lead wires and U bolts, specify size of pipe. See Plate E0905 Fig. C1 for details	
B	Two way Relay Box Complete as shown, for fastening to 3″, 4″, 5″ or 6″ pipe. Includes blank terminal board, bushing for lead wires and U bolts, specify size of pipe. See Plate E0905 Fig. D1 for details	
C	Three way Relay Box Complete as shown, for fastening to 3″, 4″, 5″ or 6″ pipe. Includes blank terminal board, bushing for lead wires and U bolts, specify size of pipe. See Plate E0905 Fig. E1 for details	
D	Two two way Relay Boxes Complete as shown, for fastening to 3″, 4″, 5″ or 6″ pipe. Includes blank terminal boards, bushings for lead wires and bolts, specify size of pipe. See Plate E0905 Fig. D for details	
E	Two three way Relay Boxes Complete as shown, for fastening to 3″, 4″, 5″ or 6″ pipe. Includes blank terminal boards, bushings for lead wires and bolts, specify size of pipe. See Plate E0905 Fig. E for details	
F	One way Relay Box Complete with Bracket as shown, for mounting on 4″, 5″ or 6″ pipe. Includes blank terminal board and U bolts, specify size of pipe. See Plate E0905 Fig. A for relay box	28242
G	Two way Relay Box Complete with Bracket as shown, for mounting on 4″, 5″ or 6″ pipe. Includes blank terminal board and U bolts, specify size of pipe. See Plate E0905 Fig. B for relay box	28243

GENERAL RAILWAY SIGNAL COMPANY August 1916

Relay Boxes

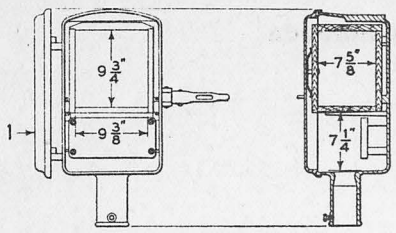
With Brackets and Bolts for Mounting

Drawing references are shown for convenience in checking shipping lists and invoices.

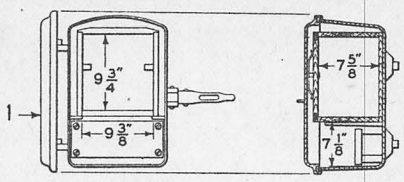
Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
H	Four way Relay Box Complete with Bracket as shown, for mounting on 4″, 5″ or 6″ pipe. Includes blank terminal board and U bolts, specify size of pipe. See Plate E0905 Fig. F for relay box	
J	Two two way Relay Boxes Complete with Brackets as shown, for mounting on 4″, 5″ or 6″ pipe. Includes blank terminal board and bolts, specify size of pipe. See Plate E0905 Fig. B for relay box	
K	Two four way Relay Boxes Complete with Brackets, for mounting on 4″, 5″ or 6″ pipe. Includes blank terminal board and bolts, specify size of pipe. See Plate E0905 Fig. F for relay box	
M	Two way Relay Box Complete with Bracket and U bolts as shown, for mounting on 4″, 5″ or 6″ pipe. Specify size of pipe. See Plate E0905 Fig. G for relay box	
N	Two two way Relay Boxes Complete with Brackets and Bolts as shown, for mounting on 4″, 5″ or 6″ pipe. Specify size of pipe. See Plate E0905 Fig. G for relay box	

Memoranda

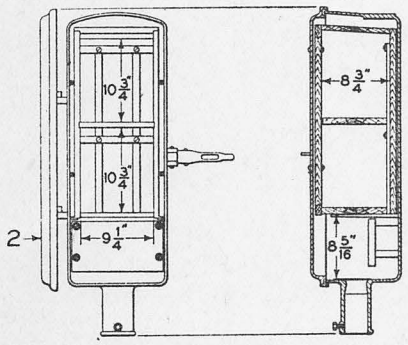
PLATE E0905



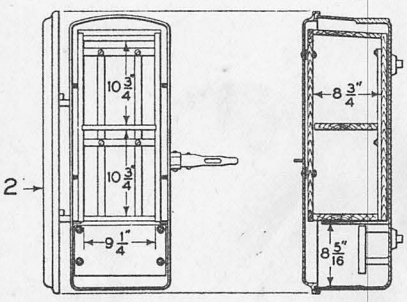
A - For One Relay



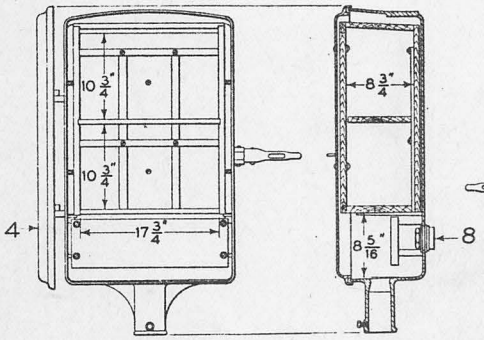
C - For One Relay



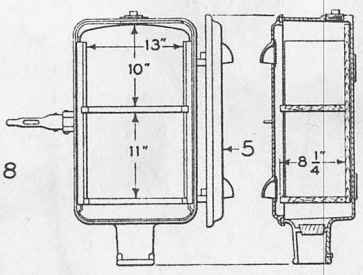
B - For Two Relays



D - For Two Relays



F - For Four Relays



G - For Two Relays

Relay Boxes

Relay Boxes

Note: See Plates E0901 and E0903 in this Part for relay boxes with posts and for relay boxes with bracket supports. See Part 10 of this Section for relay boxes and posts for mounting on battery chutes.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	One way Relay Box Complete as shown, includes blank terminal board	16101
B	Two way Relay Box Complete as shown, includes blank terminal board	16100–2
C	One way Relay Box Complete as shown, for mounting on 3″, 4″, 5″ or 6″ pipe. Includes blank terminal board and bushing for lead wires	30341
C1	as above, except with two U bolts, specify size of pipe	
D	Two way Relay Box Complete as shown, for mounting on 3″, 4″, 5″ or 6″ pipe. Includes blank terminal board and bushing for lead wires	16100–7
D1	as above, except with two U bolts, specify size of pipe	
F	Four way Relay Box Complete as shown. Includes blank terminal board and bushing for lead wires	16100–3
F1	as above, except without bushing, Fig. 8 in back of box, for lead wires	
G	Two way Relay Box Complete as shown	47520
1	Door Complete, for one way relay boxes Figs. A and C. Includes gasket, staple, inner door, springs and studs	
1a	same as Fig. 1, except without inner door, springs and studs	
2	Door Complete, for two way relay boxes Figs. B and D. Includes gasket, staple, inner door, springs and studs	
2a	as above, except without inner door, springs and studs	

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY January 1940

Relay Boxes

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
4	Door Complete, for four way Relay Box Fig. F. Includes gasket, staple, inner door, springs and studs	
4a	as above, except without inner door, springs and studs	
5	Door Complete, for two way relay box Fig. G. Includes gasket, staple, plates, screens and screws	
5a	as above, except without inner door, springs and studs	
6	Adapter, used with relay boxes Figs. C and D on 3″ pipe	35378
7	U Bolt Complete, for fastening relay boxes to 4″ pipe. Also used with adapter Fig. 6 for 3″ pipe. Includes hex. nuts and lock washers	31359
7a	U Bolt Complete, for fastening relay boxes to 5″ pipe. Includes hex. nuts and lock washers	30345
7b	U Bolt Complete, for fastening relay boxes to 6″ pipe. Includes hex. nuts and lock washers	30346
8	Bushing Complete, 1⅞″, I. D., for use with four way relay box Fig. E as additional wire outlet to pole	43034

CAST IRON RELAY BOXES FOR MOUNTING ON 4" PIPE

These relay boxes have recently been arranged for mounting on 4" pipe (4-1/2" O.D. dia.) in addition to 2-1/2" pipe as now shown in our catalog on Plate E0901 Figs. B and G. This new feature provides more space for bringing underground cable into the relay box.

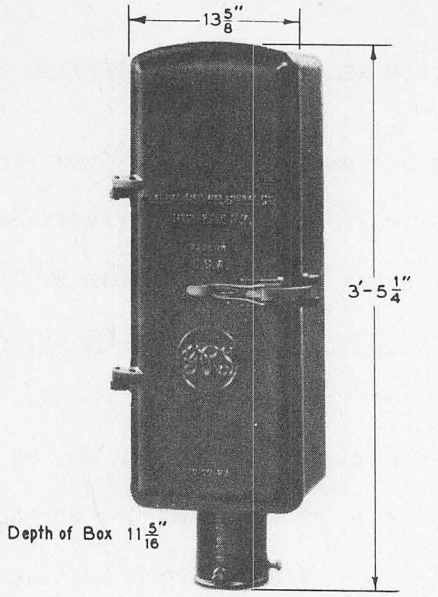
They may be supplied with lining as shown for wall mounting apparatus or with shelving arrangements as shown on Plate E0905 Figs. B and F for permitting apparatus to be placed on a shelf.

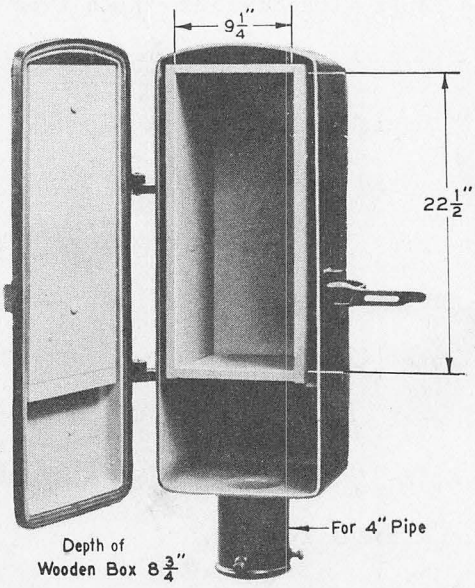
Gasketed doors with hasp and staple type fasteners are provided thereby insuring water and dust proof boxes. Ventilators may be furnished if desired.

These boxes are usually painted black with the wood lining painted gray, however other colors will be supplied if desired.

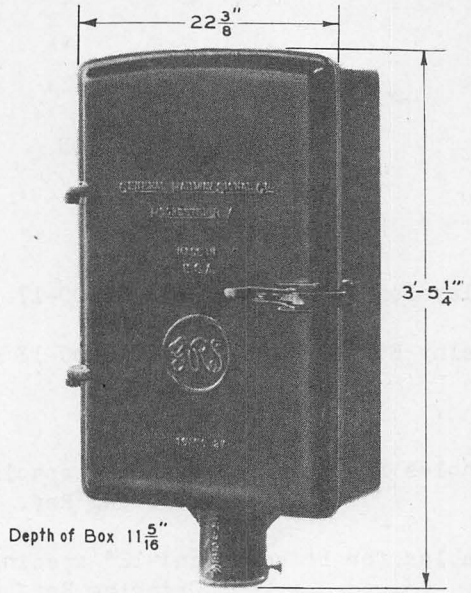
The clearance dimensions of the wooden lining are the same as shown on Plate E0905 Figs. B and F, that is height 22-1/2" - depth 8-3/4" and width 17-3/4" for the larger box and 9-1/4" for the smaller one.

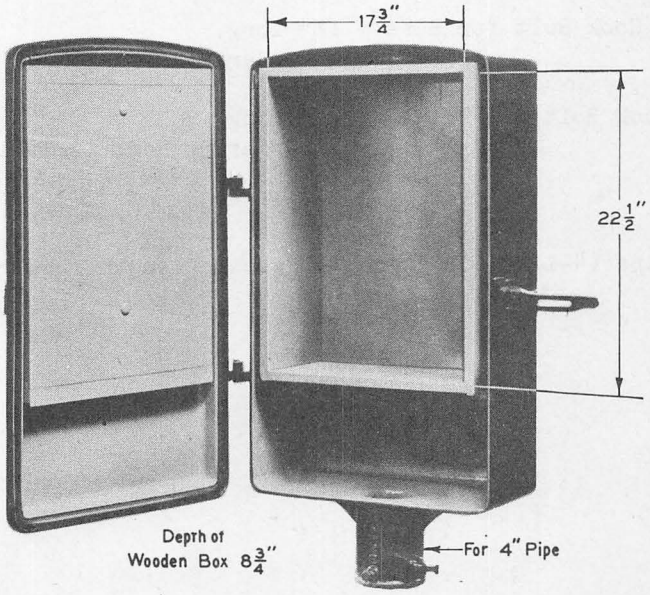
File in Catalog E Vol. 1
following Plate E0905





Two Way Relay Box


22 3/8"
3'-5 1/4"
Depth of Box 11 5/16"


17 3/4"
22 1/2"
Depth of
Wooden Box 8 3/4"
For 4" Pipe

ORDERING INFORMATION

RELAY BOX

Two Way Relay Box - Ordering Ref. 16100-17 Gr 1

Four Way Relay Box- Ordering Ref. 16100-18 Gr 1

BASE

Base with holes for 3/4" bolts and 9" spacing
Ordering Ref. 43951-4 Gr 1

Base with holes for 1" bolts and 12" spacing
Ordering Ref. 43951-5 Gr 1

BOLTS for BASE

3/4" Hook Bolt for Base - 18" long
Ordering Ref. 36182

1" Hook Bolt for Base - 24" long
Ordering Ref. 10270-1

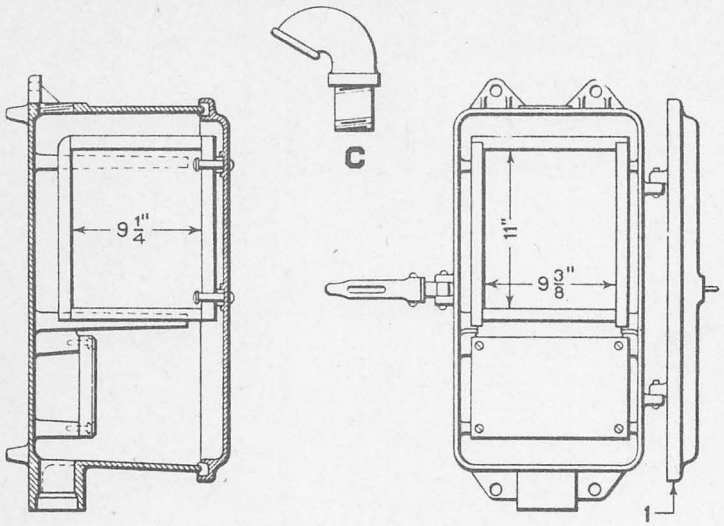
PIPE

4" pipe (4-1/2" O.D. dia.) - Specify length required.

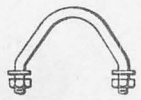
Memoranda

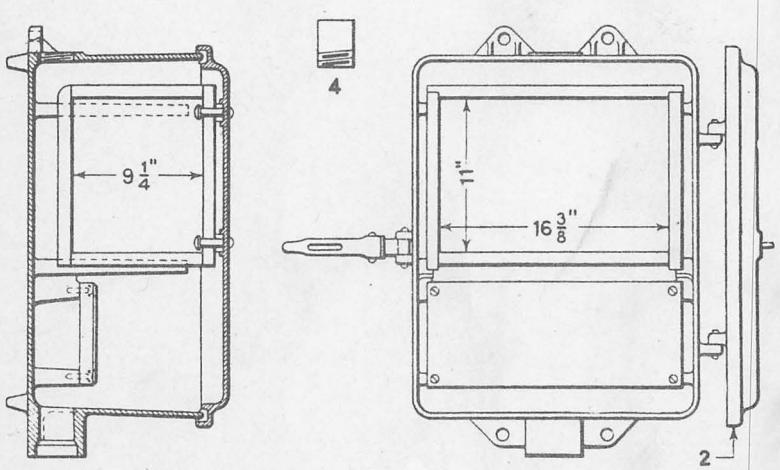
PLATE E0907

R.S.A.



A – FOR ONE RELAY





B – FOR TWO RELAYS

R. S. A. Relay Boxes

October 1925 GENERAL RAILWAY SIGNAL COMPANY

R. S. A. Relay Boxes

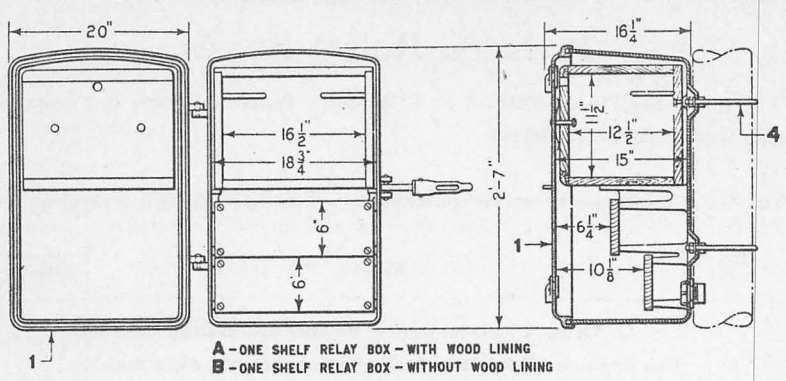
Note: See Plate E0703 for R. S. A. Cable Posts and Parts 1, 2 and 3 of this Section for D. C. Relays.

Drawing references are shown for convenience in checking shipping lists and invoices.

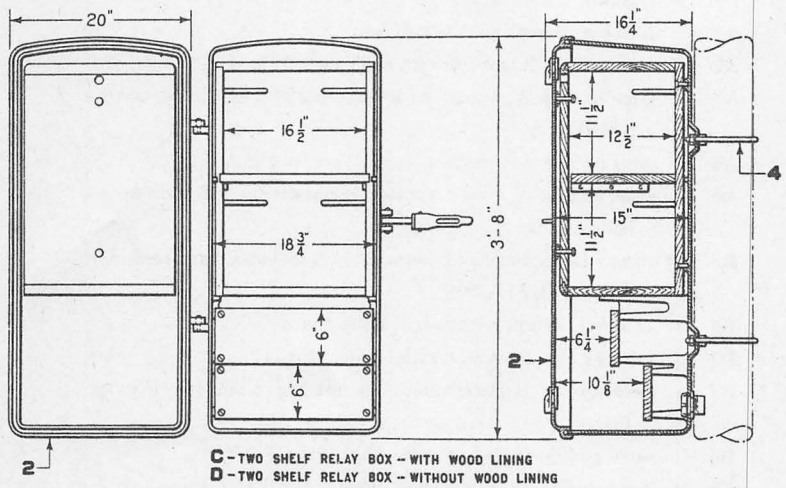
Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	One way Relay Box Complete as shown, includes blank terminal board. R. S. A. Std	
A1	as above, except with two U bolts Fig. 3	
A2	same as Fig. A, except with cable outlet Fig. C	
A3	same as Fig. A, except with cable outlet Fig. C and two U bolts Fig. 3	
A4	same as Fig. A, except with cable outlet Fig. C1	
A5	same as Fig. A, except with cable outlet Fig. C1 and two U bolts Fig. 3	
B	Two way Relay Box Complete as shown, includes blank terminal board. R. S. A. Std	43960
B1	as above, except with two U bolts Fig. 3	
B2	same as Fig. B, except with conduit Fig. 4	
B3	same as Fig. B, except with conduit Fig. 4 and two U bolts Fig. 3	
B4	same as Fig. B, except with cable outlet Fig. C1	
B5	same as Fig. B, except with cable outlet Fig. C1 and two U bolts Fig. 3	
C	Cable Outlet Complete as shown, includes elbow and one piece of 2½″ pipe, 4″ long, both ends threaded	
C1	Cable Outlet Complete, includes elbow and one piece of 2½″ pipe, 2′–9¼″ long, both ends threaded	
1	Door Complete, for Fig. A, includes gasket, inner door, springs and studs	
2	Door Complete, for Fig. B, includes gasket, inner door, springs and studs	
3	U Bolt Complete, for fastening relay boxes to 3½″ pipe. Includes hex. nuts and lock washers	43958
4	Conduit, 2½″ pipe, 3¼″ long, one end threaded	43974

PLATE E0909

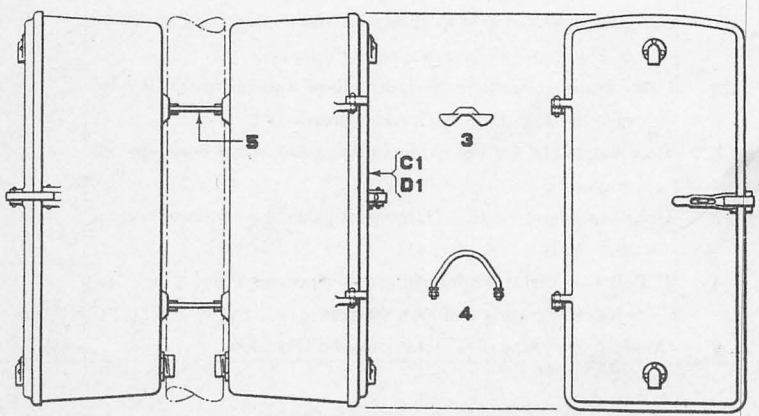
GENERAL RAILWAY SIGNAL COMPANY October 1925



A - ONE SHELF RELAY BOX - WITH WOOD LINING
B - ONE SHELF RELAY BOX - WITHOUT WOOD LINING



C - TWO SHELF RELAY BOX - WITH WOOD LINING
D - TWO SHELF RELAY BOX - WITHOUT WOOD LINING



E - TWO TWO SHELF RELAY BOXES - WITH WOOD LININGS
F - TWO TWO SHELF RELAY BOXES - WITHOUT WOOD LININGS

Relay Boxes

October 1925 GENERAL RAILWAY SIGNAL COMPANY

Relay Boxes

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	One shelf Relay Box Complete with wood lining as shown. Includes blank terminal boards, bushing for lead wires and U bolts. Specify whether to be mounted on 3″, 4″, 5″ or 6″ pipe	
A1	as above, except without U bolts	
B	One shelf Relay Box Complete, without wood lining. Includes shelf, blank terminal boards, bushing and U bolts. Specify whether to be mounted on 3″, 4″, 5″ or 6″ pipe	
B1	as above, except without U bolt	
C	Two shelf Relay Box Complete with wood lining as shown. Includes blank terminal boards, bushing for lead wires and U bolts. Specify whether to be mounted on 3″, 4″, 5″ or 6″ pipe	
C1	as above, except without U bolts	
D	Two shelf Relay Box Complete without wood lining. Includes shelves, blank terminal boards and U bolts. Specify whether to be mounted on 3″, 4″, 5″ or 6″ pipe	
D1	as above, except without U bolts	
E	Two two shelf Relay Boxes Complete with wood linings. Includes blank terminal boards, bushings for lead wires and bolts. Specify whether to be mounted on 3″, 4″, 5″ or 6″ pipe (2-C1, 4-bolts)	
F	Two two shelf Relay Boxes Complete without wood linings, for mounting on 3″, 4″, 5″ or 6″ pipe. Includes shelves, blank terminal boards, bushings for lead wires and bolts. Specify whether to be mounted on 3″, 4″, 5″ or 6″ pipe (2-D1, 4-bolts)	
1	Door Complete, for Figs. A and A1. Includes inner door, springs, studs, ventilators, screws and gasket	
1a	as above, except without inner door, springs and studs, for Figs. B and B1	
2	Door Complete, for Figs. C, C1 and E. Includes inner door, springs, studs, ventilators, screws and gasket	

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY October 1925

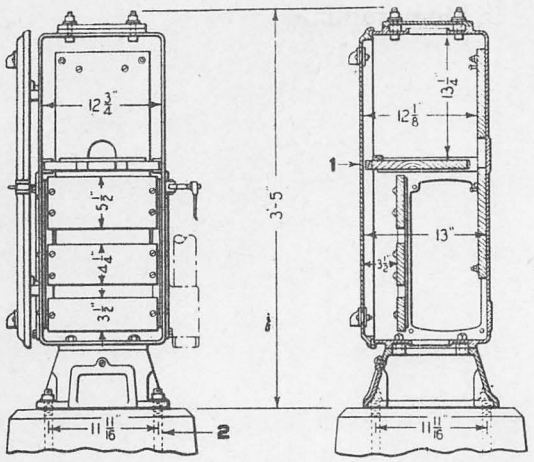
Relay Boxes

Drawing references are shown for convenience in checking shipping lists and invoices.

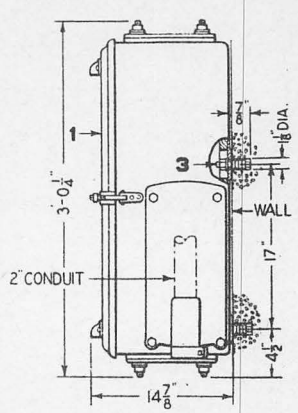
Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
2a	as above, except without inner door, springs and studs, for Figs. D, D1 and F	
3	Adapter, used with relay boxes on 3″ pipe	35378
4	U Bolt Complete, for mounting relay boxes on 4″ pipe. Also used with adapter Fig. 3 for 3″ pipe. Includes hex. nuts and lock washers	31359
4a	U Bolt Complete, for mounting relay boxes on 5″ pipe. Includes hex. nuts and lock washers	30345
4b	U Bolt Complete, for mounting relay boxes on 6″ pipe. Includes hex. nuts and lock washers	30346
5	Bolt, ½″x5½″ sq. hd. with sq. nut and lock washer for mounting two iron relay boxes back to back on 3″ pipe	
5a	Bolt, ½″x4½″ sq. hd with sq. nut and lock washer for mounting two iron relay boxes back to back on 4″ pipe	
5b	Bolt, ½″x6″ sq. hd. with sq. nut and lock washer for mounting two iron relay boxes back to back on 5″ pipe	
5c	Bolt, ½″x7½″ sq. hd. with sq. nut and lock washer for mounting two iron relay boxes back to back on 6″ pipe	

Memoranda

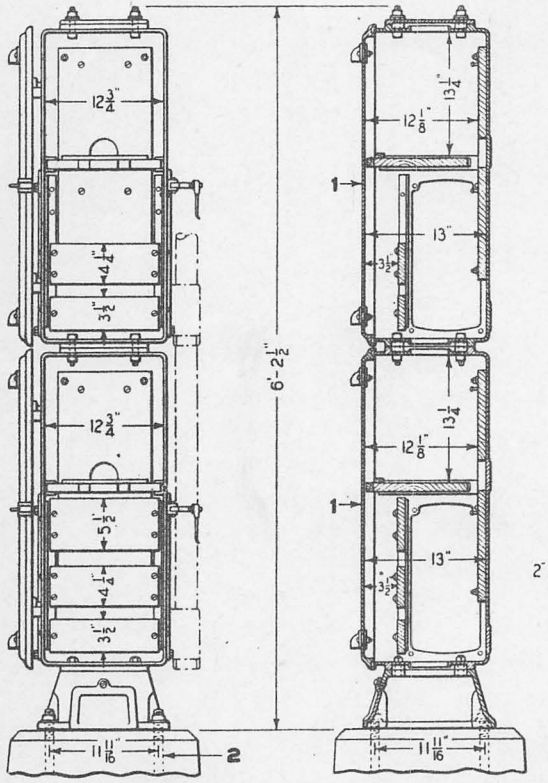
PLATE E0911



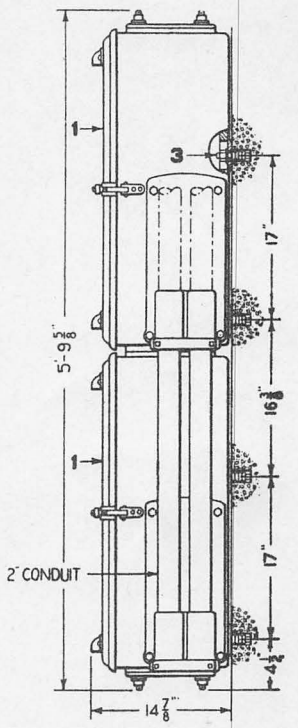
A – SINGLE RELAY BOX – FOR MOUNTING ON FOUNDATION



B – SINGLE RELAY BOX FOR MOUNTING ON WALL



C – DOUBLE RELAY BOX – FOR MOUNTING ON FOUNDATION



D – DOUBLE RELAY BOX FOR MOUNTING ON WALL

Relay Boxes

October 1925 GENERAL RAILWAY SIGNAL COMPANY

Relay Boxes

Note: If relay boxes with combinations of base and outlet boxes for conduit other than those listed are desired, same must be specified. These relay boxes are provided with removable plates to which transformers may be mounted and installed from either side of the case. Relays may be mounted on shelf or back board as desired. When housing Model 2A Relays it is desirable to remove the back board.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
A	Single Relay Box Complete, for mounting on foundation. Includes shelf, back board, blank terminal boards and foundation bolts. Does not include outlet box for conduit shown in dot and dash lines	
A1	as above, except without foundation bolts	
B	Single Relay Box Complete, for mounting on wall, includes shelf, back board, blank terminal boards, anchor bolts and single outlet box arranged for one 2″ conduit on right or left hand side as specified	
B1	as above, except without anchor bolts for fastening box to wall	
B2	same as Fig. B, except with double outlet box arranged for two 2″ conduits on right or left hand side as specified	
B3	as above, except without anchor bolts for fastening box to wall	
B4	Single Relay Box Complete, arranged for trunking entrance in bottom of case. Includes shelf, back board, blank terminal boards, anchor bolts and single outlet box arranged for one 2″ conduit on right or left hand side as specified	
B5	as above, except without anchor bolts for fastening box to wall	
B6	same as Fig. B4, except with double outlet box arranged for two 2″ conduits on right or left hand side as specified	
B7	as above, except without anchor bolts for fastening box to wall	

(Continued on following page)

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Relay Boxes

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
C	Double Relay Box Complete, for mounting on foundation. Includes shelves, back boards, blank terminal boards and foundation bolts. Does not include outlet boxes for conduit shown in dot and dash lines	
C1	as above, except without foundation bolts	
D	Double Relay Box Complete, for mounting on wall. Includes shelves, back boards, blank terminal boards, anchor bolts, conduit between boxes and double outlet box arranged for two 2″ conduits on right or left hand side as specified	
D1	as above, except without anchor bolts for fastening box to wall	
D2	same as Fig. D, except with single outlet box arranged for one 2″ conduit on right or left hand side as specified	
D3	as above, except without anchor bolts for fastening box to wall	
D4	Double Relay Box Complete, arranged for trunking entrance in bottom of case. Includes shelves, back boards, blank terminal boards, anchor bolts, conduit between boxes and double outlet box arranged for two 2″ conduits on right or left hand side as specified	
D5	as above, except without anchor bolts for fastening box to wall	
D6	same as Fig. D4, except with single outlet box arranged for one 2″ conduit on right or left hand side as specified	
D7	as above, except without anchor bolts for fastening box to wall	
1	Door Complete, includes ventilators, screws, staple, gasket and hinge pins	
2	Foundation Bolt, ¾″x18″, includes sq. nut and washer	36182
3	Anchor Bolt, ⅝″x2¾″ hex. hd., includes hex. nut, washer and cinch anchor, for mounting boxes on wall	

Memoranda

PLATE E0913

GENERAL RAILWAY SIGNAL COMPANY

October 1925

A

Relay and Instrument Cases

B

Relay and Instrument Cases

Note: The shelvings shown are merely typical arrangements and give principal dimensions. Shelvings to meet any requirement will be furnished when specified.

Wire Outlet Fig. 11 with conduit, length as desired, is furnished only when specified.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Relay and Instrument Case Complete, double door, as shown, arranged for mounting mast on top. Includes lining, shelving and terminal boards	
A1	as above, except equipped with cover plate, Fig. 10, for use where no mast is to be mounted to case	
B	Relay and Instrument Case Complete, double door, as shown, arranged for mounting mast on top. Includes lining, shelving and terminal boards	
B1	as above, except equipped with cover plate, Fig. 10, for use where no mast is to be mounted to case	
1	Stud, 7/8"–9x5½", includes two hex. nuts and washers for fastening mast to case	
2	Pipe Plug, 1½", as shown	36174
3	Door Complete, as shown for Fig. A	
4	Link, for hasp Fig. 7 in Fig. A	36024
5	Stud, for hasp Fig. 7	36026
6	Staple, with four ¼"x5/8" csk. hd. rivets used for hasp Fig 7	
7	Hasp only	36023
8	Ventilator Hood Complete, includes plate, screen and rivets, for Fig. A	
9	Tap Bolt, 7/8"–9x1½" hex. hd. for fastening cover plate Fig. 10 to case	38627
10	Cover Plate, for use when no mast is to be mounted to case	36678
11	Wire Outlet Complete, includes conduit, length as specified. Not furnished with mechanism cases complete unless specified	

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY October 1925

Relay and Instrument Cases

Drawing references are shown for convenience in checking shipping lists and invoices.

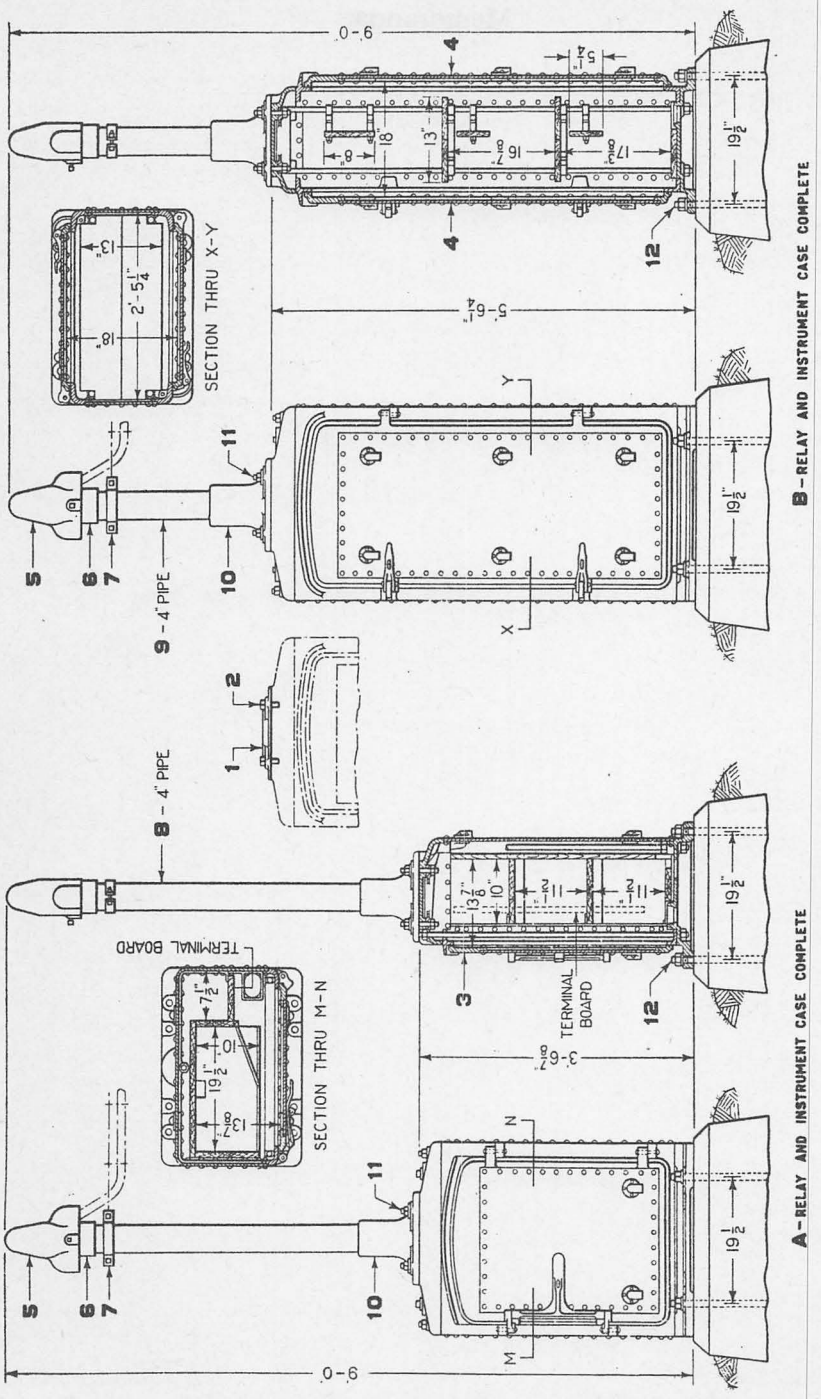
Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
12	Stud, for hinging door	36027
13	Shelving Complete, for case Fig. A, includes lining, and terminal boards	38230–13
14	Door Complete, as shown for Fig. B	
15	Link, for hasp Fig. 7 in Fig. B	36024–2
16	Ventilator Hood Complete, includes plate, screen, bolts and nuts, for Fig. B	
17	Shelving Complete, for case Fig. B, includes lining	38230–21

Memoranda

PLATE E0915

GENERAL RAILWAY SIGNAL COMPANY

October 1925



Relay and Instrument Cases

Relay and Instrument Cases

Note: Relay and instrument cases as listed below do not include foundation, cable or messenger wire. Spacing of shelves for Fig. B on opposite page is shown merely as a typical arrangement. The shelving and terminal boards are vertically adjustable and can be spaced as desired.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Relay and Instrument Case Complete as shown, includes shelving, blank terminal board and foundation bolts	
A1	as above, except without foundation bolts	
A2	same as Fig. A, except with cover plate Fig. 1 and tap bolts Fig. 2 in place of base, pipe and pinnacle	
A3	as above, except without foundation bolts	
B	Relay and Instrument Case Complete as shown, includes shelving, blank terminal boards and foundation bolts	
B1	as above, except without foundation bolts	
B2	same as Fig. B, except with cover plate Fig. 1 and tap bolts Fig. 2 in place of base, pipe and pinnacle	
B3	as above, except without foundation bolts	
1	Cover Plate, for use when base, pipe and pinnacle are not required	36678
2	Tap Bolt, 7/8″x1½″ hex. hd., for fastening cover plate Fig. 1 to case	38627
3	Door Complete, for Fig. A, includes ventilators, staple and rivets	
4	Door Complete, for Fig. B, includes ventilators, gasket, staples, plates and rivets	
5	Pinnacle, used with cap Fig. 6 on 4″ pipe, includes ½″x1″ sq. hd. set screw	30391
6	Cap, for 4″ pipe	36288
7	Clamp, for fastening messenger wire to 4″ pipe, includes bolts	36291
8	Pipe, 4″ dia., 4′–4″ long, for Fig. A	
9	Pipe, 4″ dia., 2′–5″ long, for Fig. B	
10	Base, for 4″ pipe	36095
11	Stud, 7/8″x5″, includes two hex. nuts and washers, for fastening base Fig. 10 to case	
12	Foundation Bolt, 1″x3′–0″, includes hex. nut and washer	

PLATE E0917

GENERAL RAILWAY SIGNAL COMPANY

October 1925

Relay and Instrument Cases

October 1925 GENERAL RAILWAY SIGNAL COMPANY

Relay and Instrument Cases

Note: The shelvings shown are merely typical arrangements and give principal dimensions. Shelvings to meet any requirement will be furnished when specified.

If an entirely different shelving arrangement from that shown is desired, furnish a detail wiring diagram, showing location and arrangement of all apparatus.

Trunking connection Fig. D, for bottom of case; trunking cap Fig. E for side of case or wire outlet Fig. 12, with conduit length as desired, are furnished only when specified.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Relay and Instrument Case Complete, as shown for mounting mast on top. Includes linings, shelvings and terminal boards	
A1	as above, except equipped with cover plate, Fig. 11, for use where no mast is to be mounted on top of case	
B	Relay and Instrument Case Complete, arranged for mounting mast on top. Includes shelvings and terminal boards	
B1	as above, except equipped with a cover plate, Fig. 11, for use where no mast is to be mounted on top of case	
C	Relay and Instrument Case Complete, arranged for mounting mast on top. Upper case has double doors. Includes shelvings and terminal boards	
C1	as above, except equipped with a cover plate, Fig. 11, for use where no mast is to be mounted on top of case	
D	Coupling Complete for carrying wires from case to trunking. Includes flexible conduit and bushings for fastening to upper shelf of bottom case	
E	Trunking Cap, for mounting on side of case. Includes mounting bolts	
1	Stud, $\frac{7}{8}''$x$5\frac{1}{2}''$, includes two hex. nuts and washers for fastening mast to case	
2	Pipe Plug, $1\frac{1}{2}''$, as shown	36174
3	Door Complete, as shown, for upper case	
4	Link, for hasp, Fig. 7	36024

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY October 1925

Relay and Instrument Cases

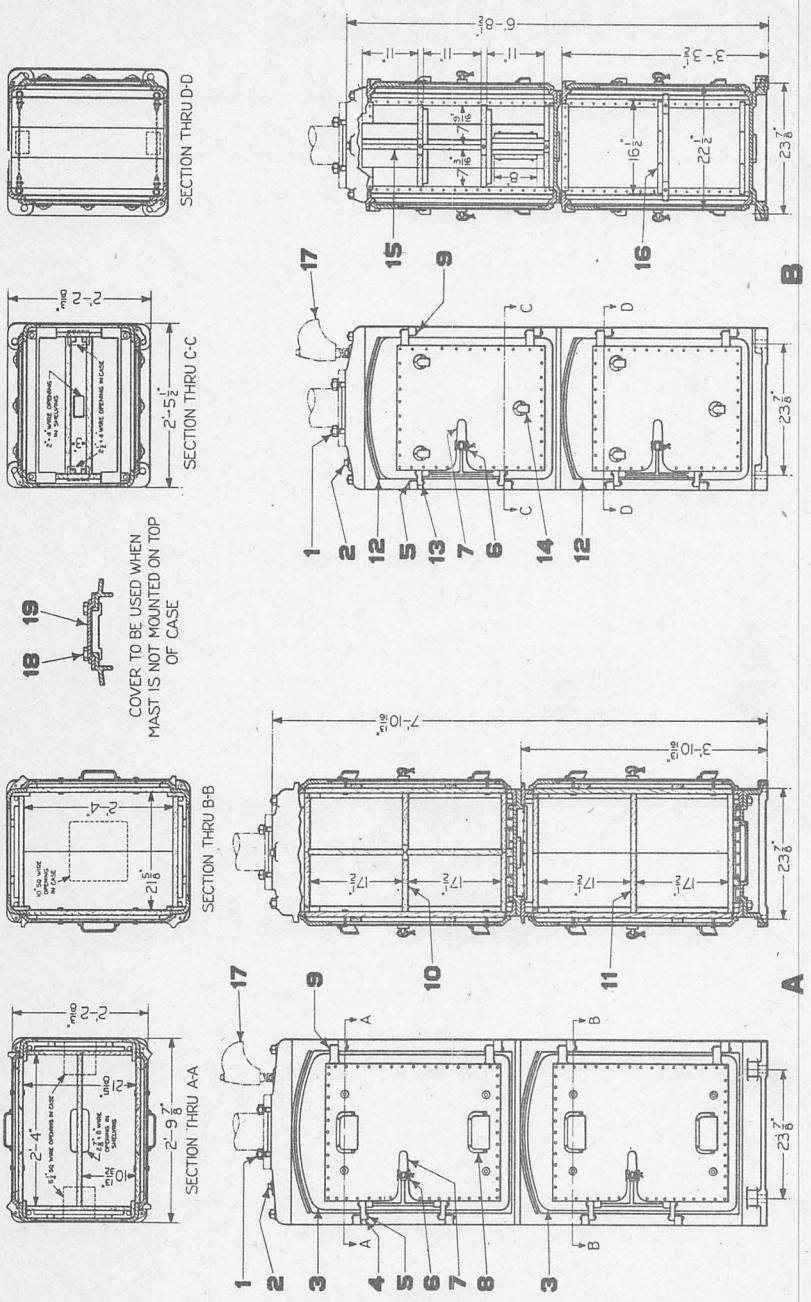
Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
5	Stud, for hasp, Fig. 7	36026
6	Staple, with four ¼″x⅝″, csk. hd. rivets, used for hasp, Fig. 7	
7	Hasp only	36023
8	Ventilation Hood Complete, includes plate, screen and rivets	
9	Door Complete, as shown, for lower case	
10	Tap Bolt, ⅞″x1½″ hex. hd., for fastening cover plate Fig. 11, to case	38627
11	Cover Plate, for use when no mast is to be mounted to case	36678
12	Wire Outlet Complete, includes conduit, length as specified. Not furnished with relay and instrument cases complete, unless specified	
13	Stud, for hinging door	36027
14	Shelving Complete, for upper case of Fig. A, includes lining and terminal boards	38230–6
15	Shelving Complete, for lower case of Fig. A, includes lining	38230–7
16	Shelving Complete, for upper case of Fig. B, includes terminal boards	38230–20
17	Shelf for lower case of Fig. B; two required	
18	Support Complete, for shelf Fig. 17. Two required for each shelf	
19	Screw, No. 14–24x⅞″ rd. hd., with hex. nut for fastening strap Fig 21 to case	
20	Door Complete for upper case of Fig. C	
21	Strap, for fastening support Fig. 22 to case	38280–13
22	Support, for terminal boards	51838
23	Terminal Board, 8″ wide, as shown. Includes screws for mounting	
24	Board for covering wire entrance to upper case. (No drilling unless specified)	46664–4
25	Lock Nut, T & B, 2½″ for coupling Fig. 26	45898–1
26	Coupling as shown	0868
27	Conduit, 2″ flexible, length as specified	
28	Elbow Complete, as shown	30613
29	Coupling Complete, for fastening 2″ elbow Fig. 28 to trunking	46770

Memoranda

PLATE E0919

GENERAL RAILWAY SIGNAL COMPANY October 1925



Relay and Instrument Cases

October 1925 GENERAL RAILWAY SIGNAL COMPANY

Relay and Instrument Cases

Note: The shelvings shown are merely typical arrangements and give principal dimensions. Shelvings to meet any requ rement will be furnished when specified.

Wire Outlet Fig. 17 with conduit, length as desired, is furnished only when specified.

The relay and instrument cases shown on this plate are regularly furnished with double doors, but can be had with a single door on either the upper or lower case when specified.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Relay and Instrument Case Complete as shown for mounting mast on top. Includes linings, shelvings and terminal boards	
A1	as above, except equipped with cover plate, Fig. 19, for use where no mast is to be mounted on top of case	
B	Relay and Instrument Case Complete as shown for mounting mast on top. Includes linings, shelvings and terminal boards	
B1	as above, except equipped with cover plate, Fig. 19 for use where no mast is to be mounted on top of case	
1	Stud, $\frac{7}{8}$"x5$\frac{1}{2}$", includes two hex. nuts and washers for fastening mast to case	
2	Pipe Plug, 1$\frac{1}{2}$", as shown	36174
3	Door Complete, as shown, for Fig. A	
4	Link for hasp Fig. 7 in Fig. A	36024–2
5	Stud for link Fig. 4	36026
6	Staple, with four $\frac{1}{4}$"x$\frac{5}{8}$", csk. hd. rivets, used for hasp Fig. 7	
7	Hasp only	36023
8	Ventilator Hood Complete, includes plate, screen and rivets	
9	Stud, for hinging door	36027
10	Shelving Complete, for upper case of Fig. A, includes lining and terminal boards	38230–21
11	Shelving Complete, for lower case of Fig. A, includes lining	38230–22
12	Door Complete, as shown for Fig. B	

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY October 1925

Relay and Instrument Cases

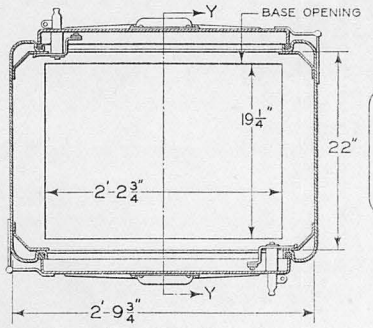
Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
13	Link, for hasp Fig. 7, in Fig. B	36024
14	Ventilation Hood Complete, includes plate, screen and rivets	
15	Shelving Complete, for upper case of Fig. B, includes terminal boards	38230–23
16	Shelving Complete for lower case of Fig. B	38230–24
17	Wire Outlet Complete, includes conduit, length as specified. Not furnished with relay and instrument cases complete, unless specified	
18	Tap Bolt, 7/8″x1½″., hex. hd., for fastening cover plate Fig. 19 to case	38627
19	Cover Plate, for use when no mast is to be mounted to case	36678

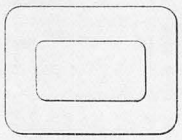
Welded Steel Cases and Housings

Supersedes Plates E0932 to E0960 inclusive dated March 1936

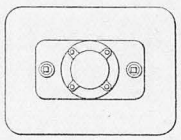
PLATE E0932



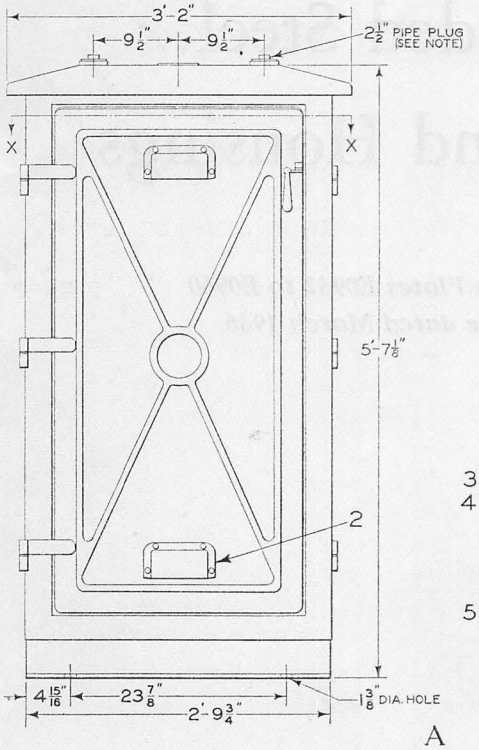
SECTION X-X

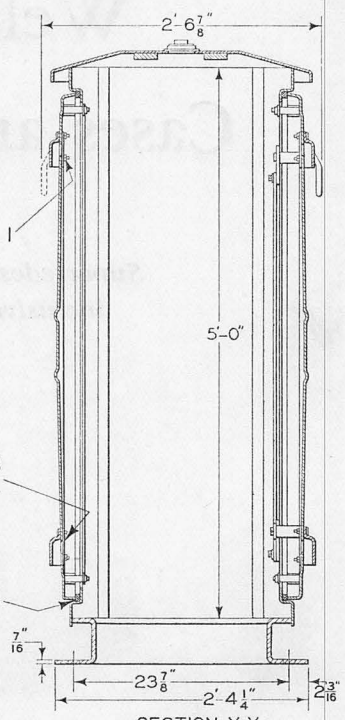


PLAIN COVER
FIG. W



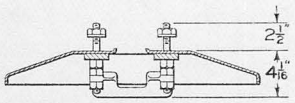
TOP VIEW SHOWING COVER USED WHEN POLE IS NOT MOUNTED ON CASE. HAS TAPPED OPENINGS FOR OUTLET COUPLINGS.
FIG. X



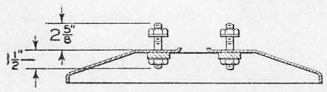


A

SECTION Y-Y



VIEW SHOWING SHIELD USED WITH POLE MOUNTING, WHEN WOOD LINING IS NOT USED IN TOP OF CASE
FIG. Y



VIEW SHOWING POLE MOUNTING WHEN WOOD LINING IS USED IN TOP OF CASE
FIG. Z

Welded Steel Cases, Front and Back Doors

Welded Steel Cases
Front and Back Doors

NOTE—See Plate E0942 for cable post and outlets. Cases Complete do not include anchor bolts, shelving or padlocks, which must be ordered separately if required.

Cases will be painted inside and out with one coat of rust inhibiting primer and finishing coats of gray inside unless otherwise specified.

The normal door opening is approximately 250 degrees, however, a chain can be fastened to door that will allow door to open only 90 degrees. Cases with door opening of 250 degrees will be furnished unless otherwise specified.

Doors are equipped with removable screen ventilators.

Cases can be wired at the factory if customer will furnish a wiring diagram.

Fig. W on opposite page shows plain cover used when a pole or conduit is not to be assembled on top of case.

Fig. X shows cover and pipe plugs to close holes in cap when a pole is not to be mounted on case. 2½″ pipe plugs will be furnished as standard, however, reducing bushings for 2″ or 1½″ pipe plugs may be furnished if specified. Pipe plugs may be removed if outlet couplings shown on Plate E0942 are to be used.

Fig. Y shows pole mounting using water shield in top of case. Water shield can be used only when there is no wood lining in top of case.

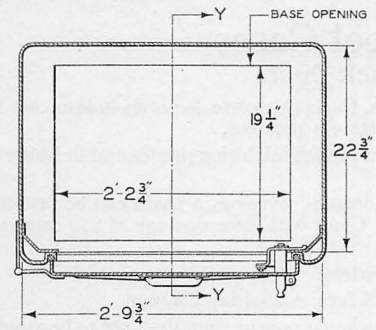
Fig. Z shows pole mounting when wood lining is used in top of case.

See Plates E0940 and E0941 for shelvings.

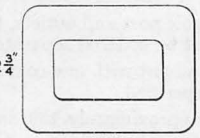
See Plate E0938 for shelvings with Type B relay racks.

Drawing references are shown for convenience in checking shipping lists and invoices.

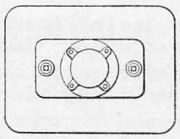
Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Welded Steel Case Complete, high, with formed sheet metal front and back doors. Does not include shelving. **Order must specify the following:** (1) Whether pole is to be mounted on case. (2) If pole is not to be mounted on case specify which cap as shown in Figs. W or X is required. (3) Whether water shield as shown in Fig. Y is required. (4) If cable post or outlets are required see Plate E0942 and specify ones desired	36006-14
A1	as above, except includes shelving, see Plates E0938, E0940 and E0941 and specify shelving required, also give information called for in Fig. A under (1), (2), (3) and (4).	
1	Nut, ¼″-20 x $\frac{7}{32}$″ hex., for screws on hood	0383
2	Hood Complete, with four screws welded in place	14604 Gr. 1
3	Screen, for ventilator	47527
4	Plate, for ventilator	47526
5	Gasket, 14 ft. required per door	43460-3



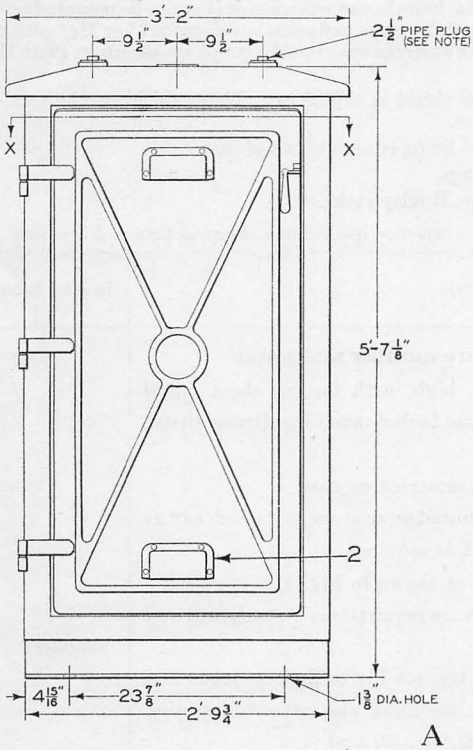
SECTION X-X



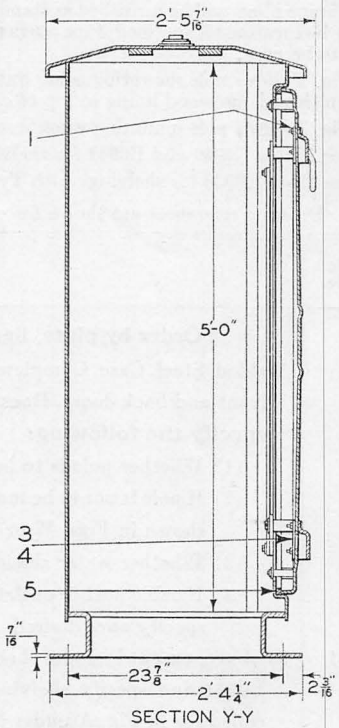
PLAIN COVER
FIG. W



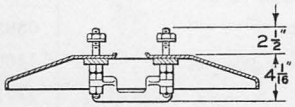
TOP VIEW SHOWING COVER USED WHEN POLE IS NOT MOUNTED ON CASE. HAS TAPPED OPENINGS FOR OUTLET COUPLINGS.
FIG. X



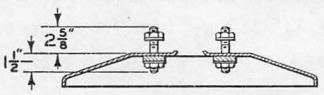
A



SECTION Y-Y



VIEW SHOWING SHIELD USED WITH POLE MOUNTING WHEN WOOD LINING IS NOT USED IN TOP OF CASE
FIG. Y



VIEW SHOWING POLE MOUNTING WHEN WOOD LINING IS USED IN TOP OF CASE
FIG. Z

Welded Steel Cases, Front Door only

March 1949 GENERAL RAILWAY SIGNAL COMPANY

Welded Steel Cases

Front Door Only

NOTE—See Plate E0942 for cable post and outlets.

Cases Complete do not include anchor bolts, shelving or padlocks, which must be ordered separately if required.

Cases will be painted inside and out with one coat of rust inhibiting primer and finishing coats of gray inside unless otherwise specified.

The normal door opening is approximately 250 degrees, however, a chain can be fastened to door that will allow door to open only 90 degrees. Cases with door opening of 250 degrees will be furnished unless otherwise specified.

Door is equipped with removable screen ventilators.

Cases can be wired at the factory if customer will furnish a wiring diagram.

Fig. W on opposite page shows plain cover used when a pole or conduit is not to be assembled on top of case.

Fig. X shows cover and pipe plugs to close holes in cap when a pole is not to be mounted on case. 2½″ pipe plugs will be furnished as standard, however, reducing bushings for 2″ or 1½″ pipe plugs may be furnished if specified. Pipe plugs may be removed if outlet couplings shown on Plate E0942 are to be used.

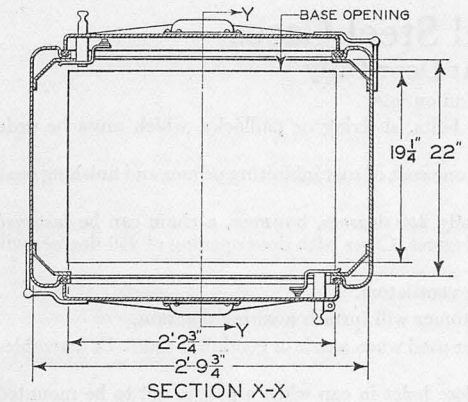
Fig. Y shows pole mounting using water shield in top of case. Water shield can be used only when there is no wood lining in top of case.

Fig. Z shows pole mounting when wood lining is used in top of case.

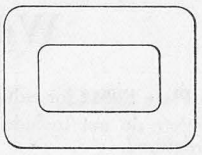
See Plate E0940 for shelving.

Drawing references are shown for convenience in checking shipping lists and invoices.

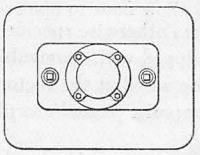
Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Welded Steel Case Complete, high, with formed sheet metal front door only. Does not include shelving. **Order must specify the following:** (1) Whether pole is to be mounted on case. (2) If pole is not to be mounted on case, specify which cap as shown in Figs. W or X is required. (3) Whether water shield as shown in Fig. Y is required. (4) If cable post or outlets are required see Plate E0942 and specify ones desired	36006-20
A1	as above, except includes shelving, see Plate E0940 and specify shelving required, also give information called for in Fig. A under (1), (2), (3) and (4).	
1	Nut, ¼″-20 x $\frac{7}{32}$″ hex., for screws on hood	0383
2	Hood Complete, with four screws welded in place	14604 Gr. 1
3	Screen, for ventilator	47527
4	Plate, for ventilator	47526
5	Gasket, 14 ft., long, for door	43460-3



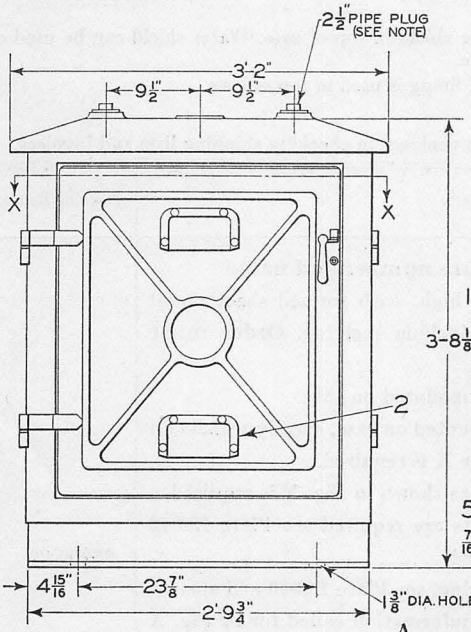
SECTION X-X



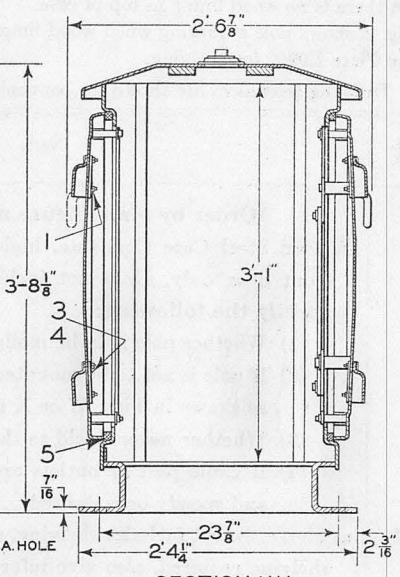
PLAIN COVER
FIG. W



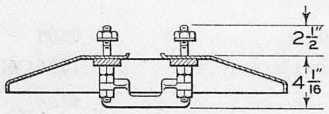
TOP VIEW SHOWING COVER USED WHEN POLE IS NOT MOUNTED ON CASE. HAS TAPPED OPENINGS FOR OUTLET COUPLINGS.
FIG. X



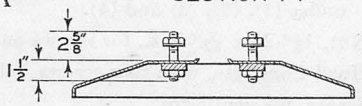
A



SECTION Y-Y



VIEW SHOWING SHIELD USED WITH POLE MOUNTING, WHEN WOOD LINING IS NOT USED IN TOP OF CASE
FIG. Y



VIEW SHOWING POLE MOUNTING WHEN WOOD LINING IS USED IN TOP OF CASE
FIG. Z

Welded Steel Cases, Front and Back Doors

Welded Steel Cases

Front and Back Doors

NOTE—See Plate E0942 for cable post and outlets.

Cases Complete do not include anchor bolts, shelving or padlocks, which must be ordered separately if required.

Cases will be painted inside and out with one coat of rust inhibiting primer and finishing coats of gray inside unless otherwise specified.

The normal door opening is approximately 250 degrees, however, a chain can be fastened to door that will allow door to open only 90 degrees. Cases with door opening of 250 degrees will be furnished unless otherwise specified.

Doors are equipped with removable screen ventilators.

Cases can be wired at the factory if customer will furnish a wiring diagram.

Fig. W on opposite page shows plain cover used when a pole or conduit is not to be assembled on top of case.

Fig. X shows cover and pipe plugs to close holes in cap when a pole is not to be mounted on case. 2½″ pipe plugs will be furnished as standard, however, reducing bushings for 2″ or 1½″ pipe plugs may be furnished if specified. Pipe plugs may be removed if outlet couplings shown on Plate E0942 are to be used.

Fig. Y shows pole mounting using water shield in top of case. Water shield can be used only when there is no wood lining in top of case.

Fig. Z shows pole mounting when wood lining is used in top of case.

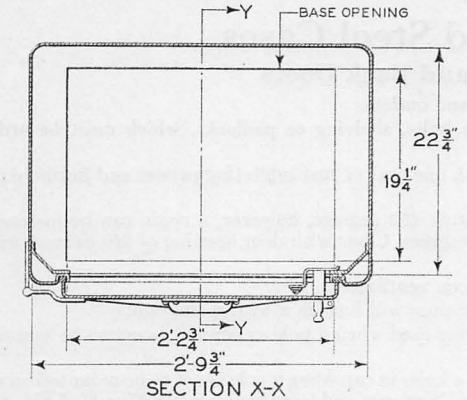
See Plates E0939 and E0941 for shelvings.

See Plate E0938 for shelvings with Type B relay racks.

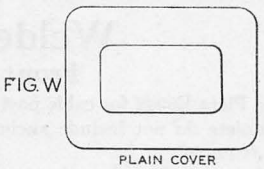
Drawing references are shown for convenience in checking shipping lists and invoices.

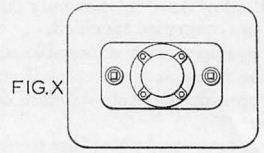
Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Welded Steel Case Complete, low, with formed sheet metal front and back doors. Does not include shelving. **Order must specify the following:** (1) Whether pole is to be mounted on case. (2) If pole is not to be mounted on case, specify which cap as shown in Figs. W or X is required. (3) Whether water shield as shown in Fig. Y is required. (4) If cable posts or outlets are required see Plate E0942 and specify ones desired	36006-15
A1	as above, except includes shelving, see Plates E0938, E0939 and E0941 and specify shelving required, also give information called for in Fig. A under (1), (2), (3) and (4).	
1	Nut, ¼″-20 x $\frac{7}{32}$″ hex., for screws on hood	0383
2	Hood Complete, with four screws welded in place	14604 Gr. 1
3	Screen, for ventilator	47527
4	Plate, for ventilator	47526
5	Gasket, 10′-6″ required per door	43460-3

GENERAL RAILWAY SIGNAL COMPANY March 1949

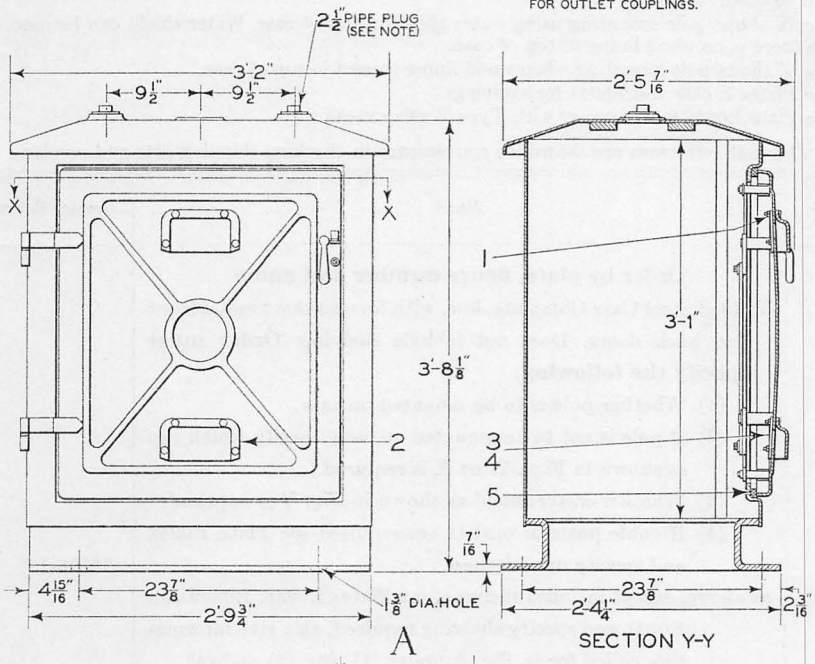


SECTION X-X

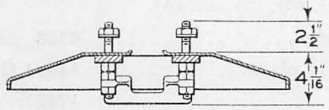




TOP VIEW SHOWING COVER USED WHEN POLE IS NOT MOUNTED ON CASE. HAS TAPPED OPENINGS FOR OUTLET COUPLINGS.

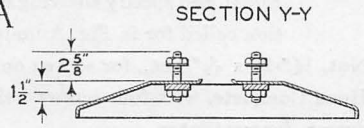


SECTION Y-Y



VIEW SHOWING SHIELD USED WITH POLE MOUNTING WHEN WOOD LINING IS NOT USED IN TOP OF CASE

FIG. Y



VIEW SHOWING POLE MOUNTING WHEN WOOD LINING IS USED IN TOP OF CASE

FIG. Z

Welded Steel Cases, Front Door Only

March 1949 GENERAL RAILWAY SIGNAL COMPANY

Welded Steel Cases
Front Door Only

NOTE—See Plate E0942 for cable post and outlets.

Cases Complete do not include anchor bolts, shelving or padlocks, which must be ordered separately if required.

Cases will be painted inside and out with one coat of rust inhibiting primer and finishing coats of gray inside unless otherwise specified.

The normal door opening is approximately 250 degrees, however, a chain can be fastened to door that will allow door to open only 90 degrees. Cases with door opening of 250 degrees will be furnished unless otherwise specified.

Door is equipped with removable screen ventilators.

Cases can be wired at the factory if customer will furnish a wiring diagram.

Fig. W on opposite page shows plain cover used when a pole or conduit is not to be assembled on top of case.

Fig. X shows cover and pipe plugs to close holes in cap when a pole is not to be mounted on case. 2½″ pipe plugs will be furnished as standard, however, reducing bushings for 2″ or 1½″ pipe plugs may be furnished if specified. Pipe plugs may be removed if outlet couplings shown on Plate E0942 are to be used.

Fig. Y shows pole mounting using water shield in top of case. Water shield can be used only when there is no wood lining in top of case.

Fig. Z shows pole mounting when wood lining is used in top of case.

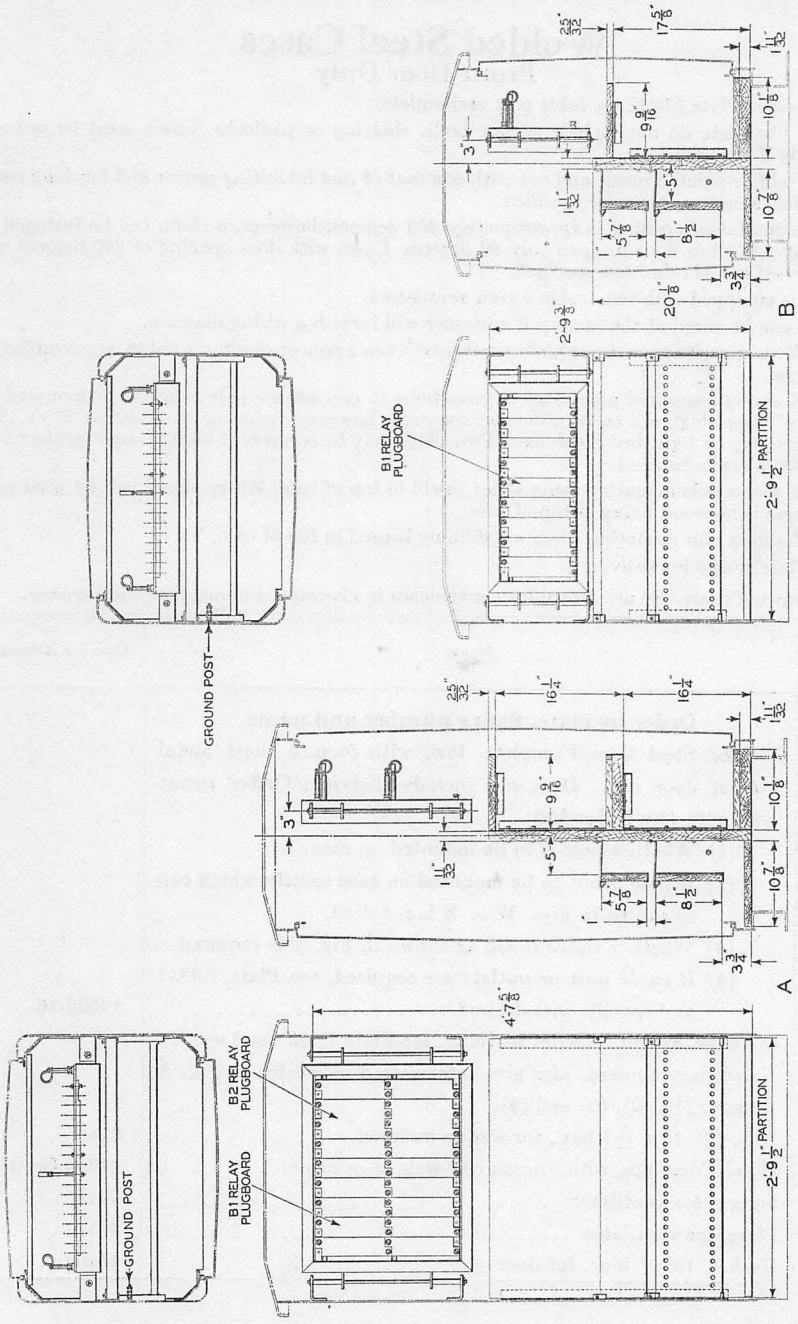
See Plate E0939 for shelving.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Welded Steel Case Complete, low, with formed sheet metal front door only. Does not include shelving. **Order must specify the following:** (1) Whether pole is to be mounted on case. (2) If pole is not to be mounted on case specify which cap as shown in Figs. W or X is required. (3) Whether water shield as shown in Fig. Y is required. (4) If cable post or outlets are required, see Plate E0942 and specify ones desired	36006-16
A1	as above, except includes shelving, see Plate E0939 and specify shelving required, also give information called for in Fig. A under (1), (2), (3) and (4).	
1	Nut, ¼″-20 x $\frac{7}{32}$″ hex., for screws on hood	0383
2	Hood Complete, with four screws welded in place	14604 Gr. 1
3	Screen, for ventilator	47527
4	Plate, for ventilator	47526
5	Gasket, 10′-6″ long, for door	43460-3

PLATE E0938

GENERAL RAILWAY SIGNAL COMPANY March 1949



Shelvings with Type B Relay Racks

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Shelvings with Type B Relay Racks

For Welded Steel Cases

NOTE—The shelvings listed below are recommended as standard. However, other types of shelvings can be furnished if customer will specify quantity and type of apparatus to be mounted or give information from which it can be determined.

The relay racks for these shelvings can be spring mounted if so specified.

For ordering information on plugboards see Vol. 2, Section E, Part 31.

Drawing references are shown for convenience in checking shipping lists and invoices.

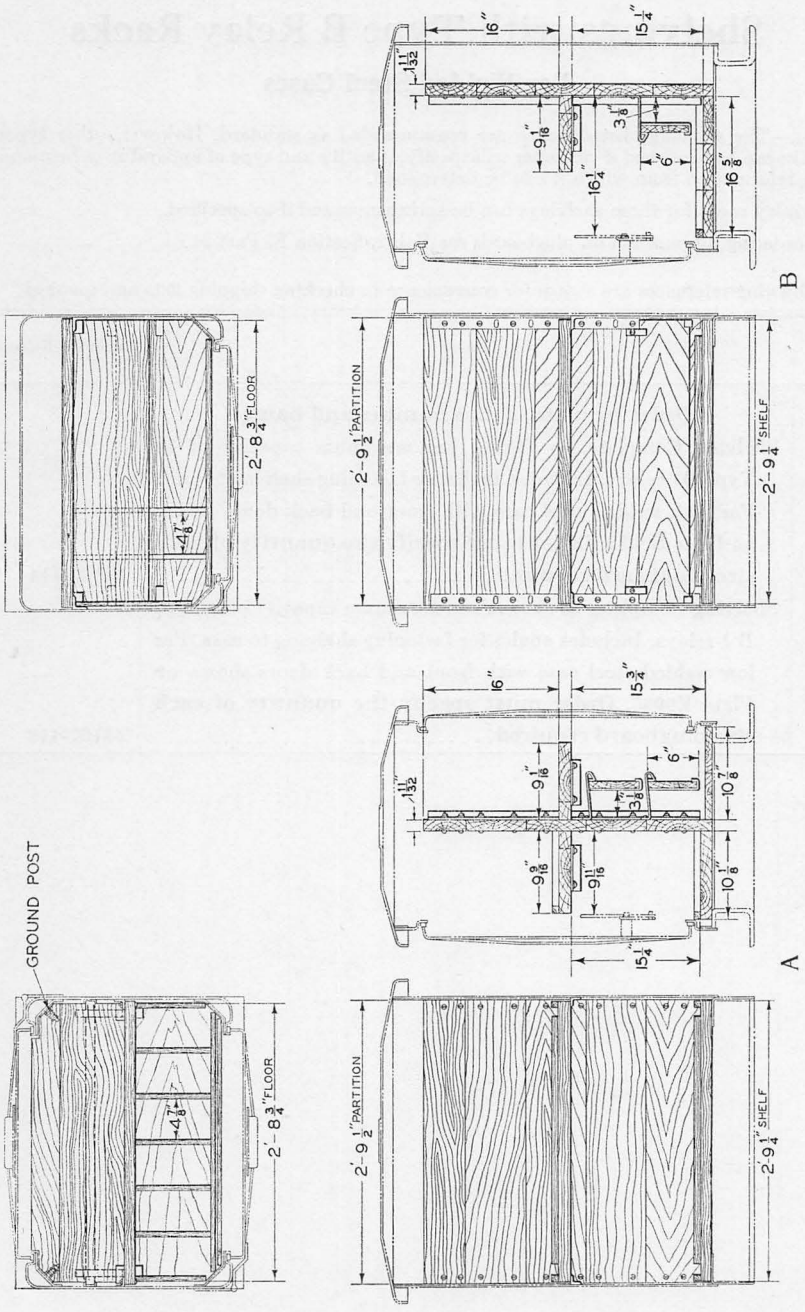
Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Shelving Complete, as shown, has maximum capacity of 18 Type B1 relays. Includes angles for fastening shelving to case. For high welded steel case with front and back doors shown on Plate E0932. **Order must specify the quantity of each size plugboard required**	54107-114
B	Shelving Complete, as shown, has maximum capacity of 9 Type B 1 relays. Includes angles for fastening shelving to case. For low welded steel case with front and back doors shown on Plate E0935. **Order must specify the quantity of each size plugboard required**	54107-113

PLATE E0939

GENERAL RAILWAY SIGNAL COMPANY

March 1949

Shelvings for Low Welded Steel Cases



March 1949 GENERAL RAILWAY SIGNAL COMPANY

Shelvings

For Low Welded Steel Cases

NOTE—The shelvings listed below are recommended as standard. However, other types of shelving can be furnished if customer will specify quantity and type of apparatus to be mounted or give information from which it can be determined.

Shelvings Complete do not include any apparatus.

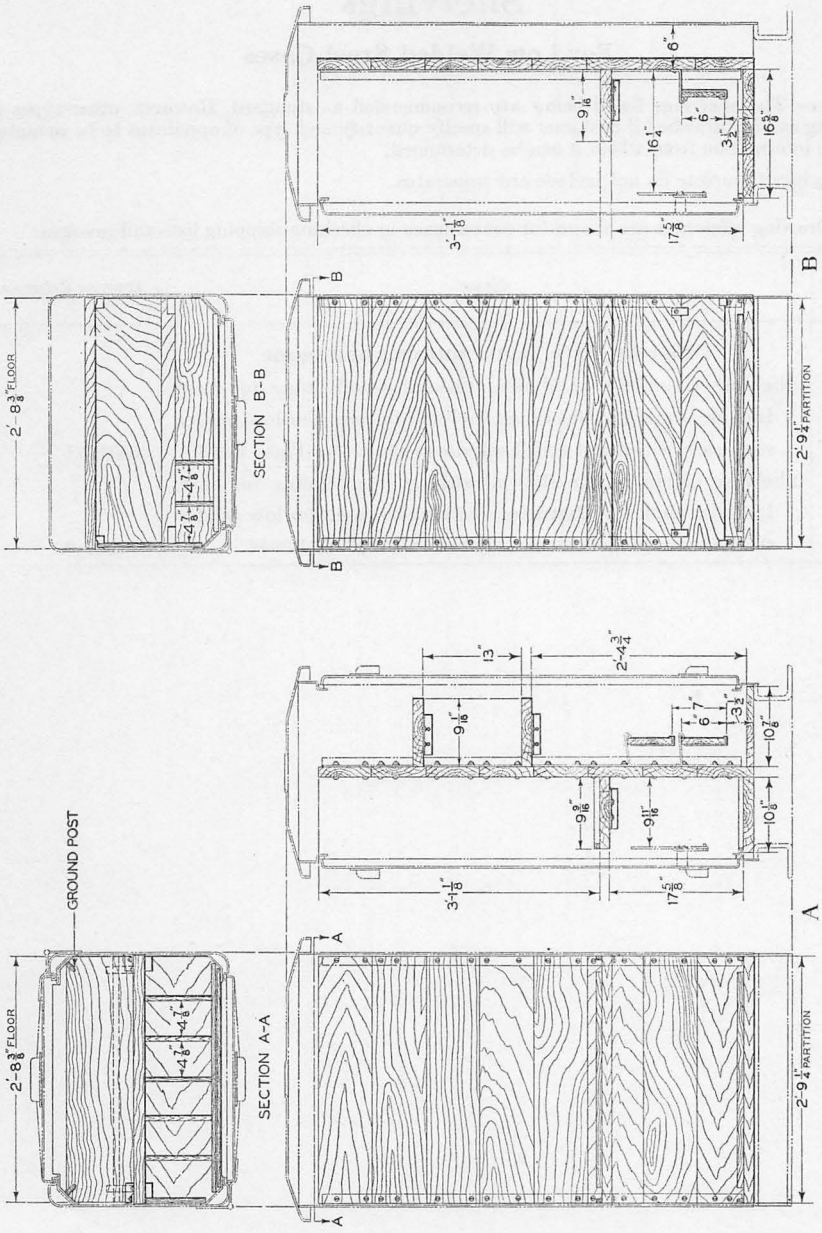
Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Shelving Complete, as shown, without wood lining for case. Includes angles for fastening shelving to case. For low welded steel case with front and back doors shown on Plate E0935.	54107-1
B	Shelving Complete, as shown, without wood lining for case. Includes angles for fastening shelving to case. For low welded steel case with front door only shown on Plate E0937.....	54107-2

PLATE E0940

GENERAL RAILWAY SIGNAL COMPANY March 1949

Shelvings for High Welded Steel Cases



March 1949 GENERAL RAILWAY SIGNAL COMPANY

Shelvings

For High Welded Steel Cases

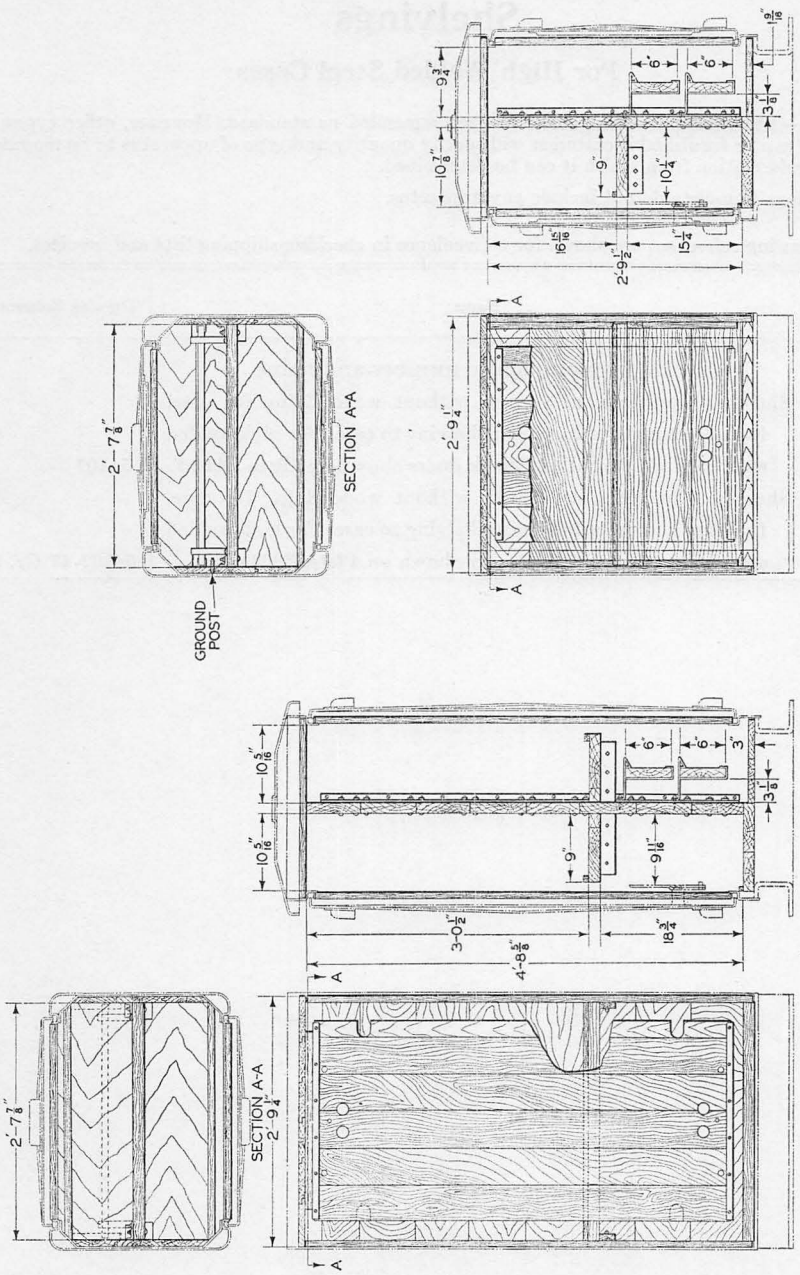
NOTE—The shelvings listed below are recommended as standard. However, other types of shelving can be furnished if customer will specify quantity and type of apparatus to be mounted or give information from which it can be determined.

Shelvings Complete do not include any apparatus.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Shelving Complete, as shown, without wood lining for case. Includes angles for fastening shelving to case. For high welded steel case with front and back doors shown on Plate E0932.	54107
B	Shelving Complete, as shown, without wood lining for case. Includes angles for fastening shelving to case. For high welded steel case with front door only shown on Plate E0934.....	54107-47 Gr. 3

PLATE E0941



Shelvings for Welded Steel Cases

March 1949 GENERAL RAILWAY SIGNAL COMPANY

Shelvings

For Welded Steel Cases

NOTE—The shelvings listed below are recommended as standard. However, other types of shelving can be furnished if customer will specify quantity and type of apparatus to be mounted or give information from which it can be determined.

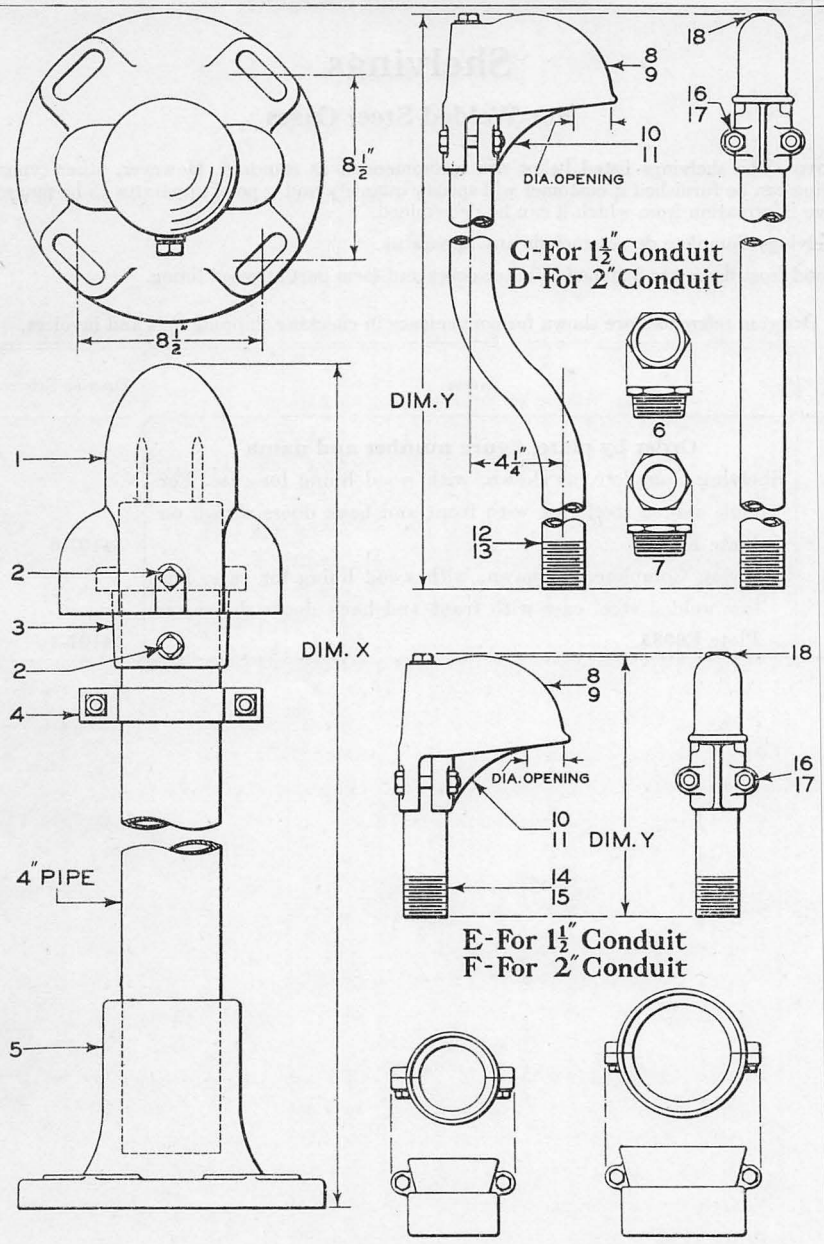
Shelvings Complete do not include any apparatus.

Wood frost doors are fastened to outer doors and form part of wood lining.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Shelving Complete, as shown, with wood lining for case. For high welded steel case with front and back doors shown on Plate E0932	54107-6
B	Shelving Complete, as shown, with wood lining for case. For low welded steel case with front and back doors shown on Plate E0935	54107-4

PLATE E0942



Cable Posts and Outlets

March 1949 GENERAL RAILWAY SIGNAL COMPANY

Cable Posts and Outlets

For Welded Steel Cases

NOTE—The cable posts and outlets shown on this plate are for Welded Steel Cases shown on Plates E0932, E0934, E0935 and E0937.

For aerial cable entrance for cases shown on Plates E0943, E0945, E0946, E0947 and E0949 see Plate E0950.

For 5″ pole and base for mounting light signals on cases see Section H.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Cable Post Complete, as shown, 4″ pipe (4½″ outside dia.) for high welded steel cases shown on Plates E0932 and E0934. Dimension "X" = 3′5″.	
B	Cable Post Complete, as shown, 4″ pipe (4½″ outside dia.) for low welded steel cases shown on Plates E0935 and E0937. Dimension "X" = 5′4″.	
C	Outlet Coupling Complete, offset, for 1½″ conduit (1 29/32″ outside dia.). Dimension "Y" = 2′4″ approx. Diameter of opening = 1¾″. Requires reducing bushing Fig. 7.....	37946 Gr. 1
C1	as above, except Dimension "Y" = 3′10″ approx.....	37946 Gr. 1
D	Outlet Coupling Complete, offset, for 2″ conduit (2⅜″ outside dia.). Dimension "Y" = 2′5¼″ approx. Diameter of opening = 3″. Requires reducing bushing Fig. 6.....	37946 Gr. 2
D1	as above, except Dimension "Y" = 3′11¼″ approx.....	37946 Gr. 2
E	Outlet Coupling Complete, for 1½″ conduit (1 29/32″ outside dia.). Dimension "Y" = 12″ approx. Diameter of opening = 1¾″. Requires reducing bushing Fig. 7.....	37946 Gr. 1
E1	as above, except Dimension "Y" = 22″ approx.....	37946 Gr. 1
F	Outlet Coupling Complete, for 2″ conduit (2⅜″ outside dia.). Dimension "Y" = 13¼″ approx. Diameter of opening = 3″. Requires reducing bushing Fig. 6.....	37946 Gr. 2
F1	as above, except Dimension "Y" = 23¼″ approx.....	37946 Gr. 2
G	Conduit Bell Complete, as shown, for 3″ conduit (3½″ outside dia.). For bringing aerial line drop directly into top of conduit using sealing compound and/or concrete.....	55342
H	Conduit Bell Complete, as shown, for 4½″ conduit (5″ outside dia.). For bringing aerial line drop directly into top of conduit using sealing compound and/or concrete.....	55342-1

(*Continued on following page*)

GENERAL RAILWAY SIGNAL COMPANY March 1949

Cable Posts and Outlets

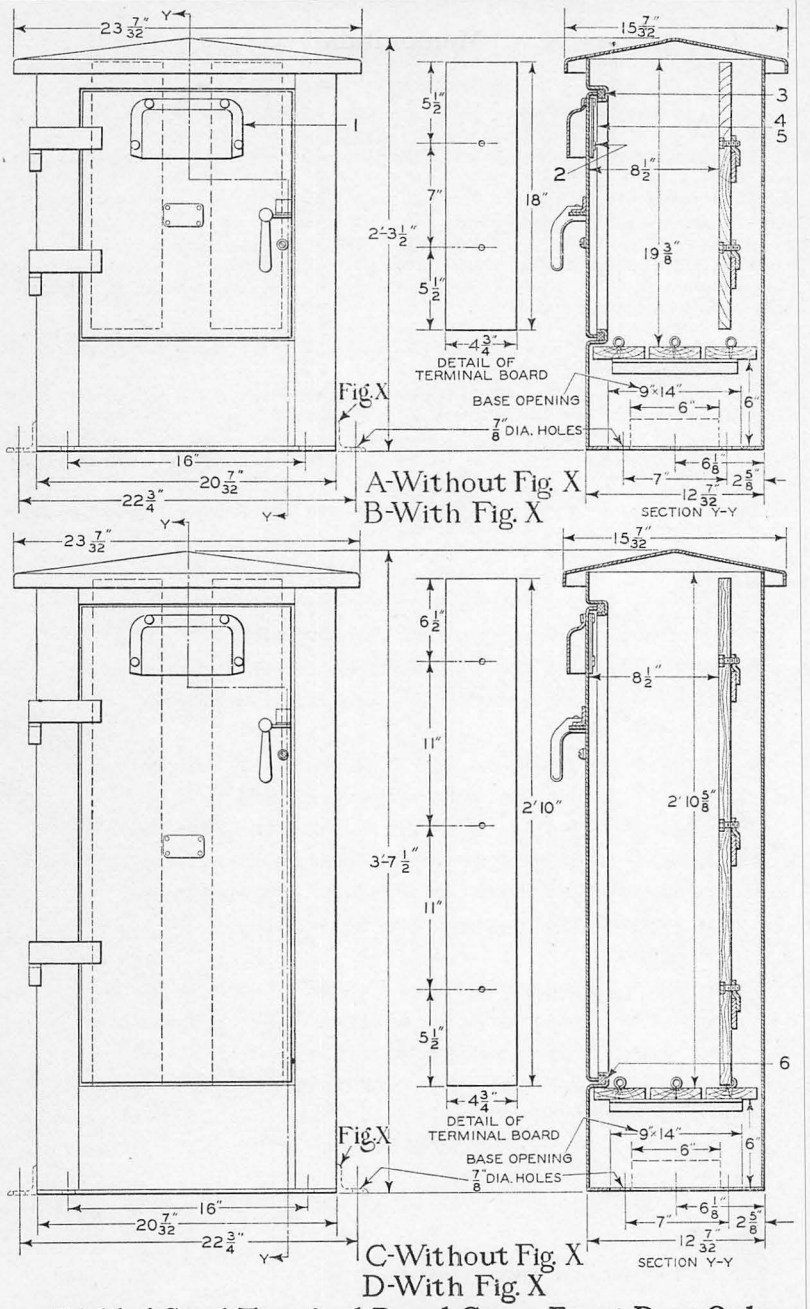
For Welded Steel Cases

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
1	Pinnacle, used with cap Fig. 3 on 4″ pipe, includes ½″ x 1″ sq. hd. set screw	30391
2	Set Screw, ½″ x 1″ sq. hd., for pinnacle and cap	0210
3	Cap, for 4″ pipe, includes sq. hd. set screw	36288–2
4	Clamp, for fastening messenger wire to 4″ pipe, includes bolts.	36291 Gr. 1
5	Pole and Base Complete, of 4″ pipe, for cable post Fig. A	45935–4 Gr. 24
5a	as above, except for cable post Fig. B	45935–4 Gr. 2
6	Reducing Bushing, 2½″ x 2″, for 2″ outlets Figs. D and F	41892–3
7	Reducing Bushing, 2½″ x 1½″, for 1½″ outlets Figs. C and E	41892–2
8	Coupling, only, for 1½″ conduit	36035
9	Coupling, only, for 2″ conduit	36035–1
10	Cap, only, for 1½″ conduit	36036
11	Cap, only, for 2″ conduit	36036–1
12	Conduit, 1½″ x 2′0″ lg., with 4¼″ offset, for outlet coupling Fig. C	51067–2
12a	as above, except 3′6″ lg., for outlet coupling Fig. C1	51067–1
13	Conduit, 2″ x 2′0″ lg., with 4¼″ offset, for outlet coupling Fig. D	40585–2
13a	as above, except 3′6″ lg., for outlet coupling Fig. D1	40585–1
14	Conduit, 1½″ x 8″ lg., for outlet coupling Fig. E	36037
14a	as above, except 18″ lg., for outlet coupling Fig. E1	36037–1
15	Conduit, 2″ x 8″ lg., for outlet coupling Fig. F	46190–22
15a	as above, except 18″ lg., for outlet coupling Fig. F1	46190–23
16	Bolt, ½″-13 x 2¾″ hex. hd., with hex. nut, for use with 1½″ conduit	0525–1
17	Bolt, ½″-13 x 3½″ hex. hd., with hex. nut, for use with 2″ conduit	0439–1
18	Pipe Plug, ¾″, for couplings Figs. 8 and 9	0755

Memoranda

PLATE E0943



Welded Steel Terminal Board Cases, Front Door Only

March 1949 GENERAL RAILWAY SIGNAL COMPANY

Welded Steel Terminal Board Cases
Front Door Only

NOTE—Cases as shown are arranged for underground wiring; however, cases can be furnished arranged for aerial cable entrance as shown on Plate E0950, when specified.

Cases Complete do not include anchor bolts or padlocks, which must be ordered separately if required.

Cases will be painted inside and out with one coat of rust inhibiting primer and finishing coats of gray inside unless otherwise specified.

Cases can be wired at factory if customer will furnish a wiring diagram.

The normal door opening is approximately 225 degrees, however, a chain can be fastened to door that will allow door to open only 90 degrees. Cases with door opening of 225 degrees will be furnished unless otherwise specified.

Door will be equipped with one removable screen ventilator, unless otherwise specified.

Fig. X shown on opposite page indicates an angle iron 6″ long welded in center of the two sides of case for mounting if required.

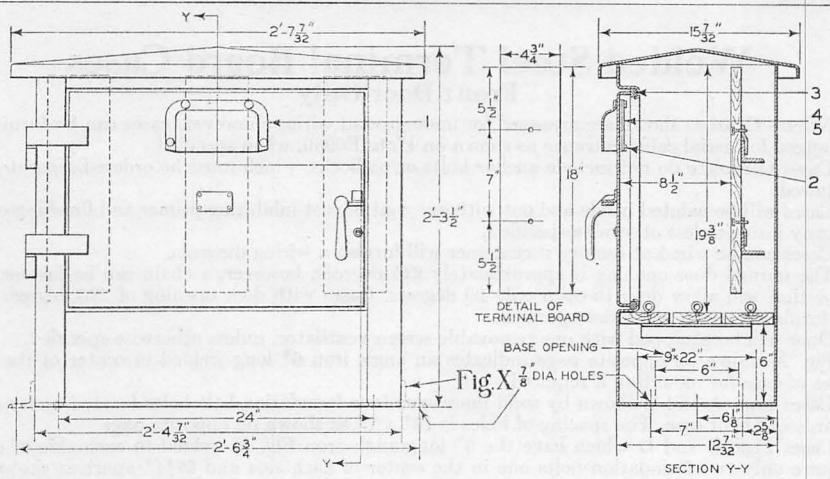
Cases Figs. A and C shown by solid lines have four foundation bolt holes located under floor boards inside of case. The spacing of holes is 16″ x 7″ as shown on opposite page.

Cases Figs. B and D which have the 6″ long angle iron Fig. X welded to each side of case, require only two foundation bolts one in the center of each side and 22¾″ apart as shown on opposite page.

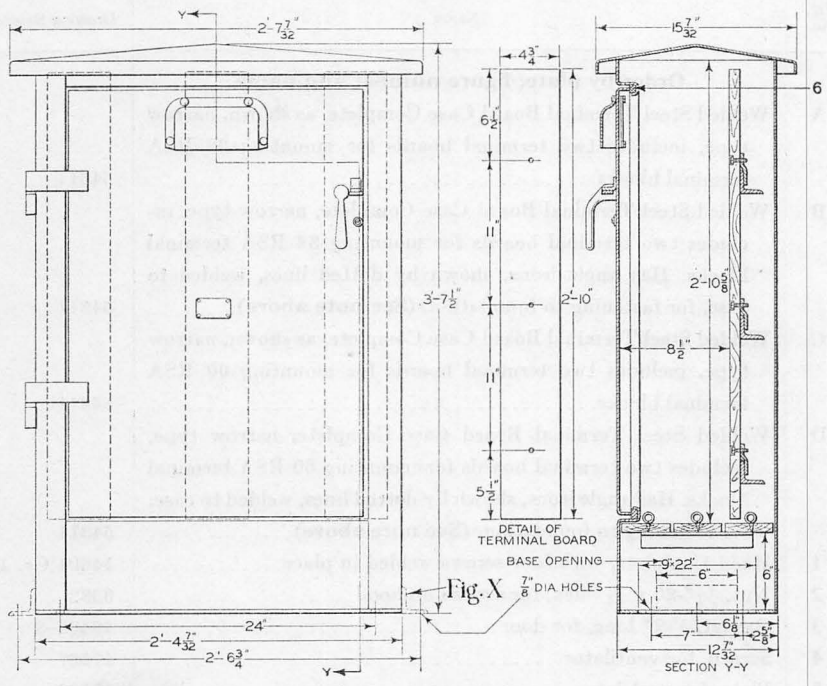
Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Welded Steel Terminal Board Case Complete, as shown, narrow type, includes two terminal boards for mounting 32 RSA terminal blocks	54311
B	Welded Steel Terminal Board Case Complete, narrow type, includes two terminal boards for mounting 32 RSA terminal blocks. Has angle irons, shown by dotted lines, welded to case, for fastening to foundation. **(See note above)**	54311
C	Welded Steel Terminal Board Case Complete, as shown, narrow type, includes two terminal boards for mounting 60 RSA terminal blocks	54311
D	Welded Steel Terminal Board Case Complete, narrow type, includes two terminal boards for mounting 60 RSA terminal blocks. Has angle irons, shown by dotted lines, welded to case, for fastening to foundation. **(See note above)**	54311
1	Hood Complete, with four screws welded in place	14604 Gr. 1
2	Nut, ¼″-20 x $\frac{7}{32}$″ hex. for screws on hood	0383
3	Gasket, 5′-2″ long, for door	43460–3
4	Screen, for ventilator	47527
5	Plate, for ventilator	47526
6	Gasket, 8′-0″ long, for door	43460-3

PLATE E0945



A-Without Fig. X
B-With Fig. X



C-Without Fig. X
D-With Fig. X

Welded Steel Terminal Board Cases, Front Door Only

March 1949 GENERAL RAILWAY SIGNAL COMPANY

Welded Steel Terminal Board Cases
Front Door Only

NOTE—Cases as shown are arranged for underground wiring; however, cases can be furnished arranged for aerial cable entrance as shown on Plate E0950, when specified.

Cases Complete do not include anchor bolts or padlocks, which must be ordered separately if required.

Cases will be painted inside and out with one coat of rust inhibiting primer and finishing coats of gray inside unless otherwise specified.

Cases can be wired at factory if customer will furnish a wiring diagram.

The normal door opening is approximately 225 degrees, however, a chain can be fastened to door that will allow door to open only 90 degrees. Cases with door opening of 225 degrees will be furnished unless otherwise specified.

Door will be equipped with one removable screen ventilator, unless otherwise specified.

Fig. X shown on opposite page indicates an angle iron 6″ long welded in center of the two sides of case for mounting if required.

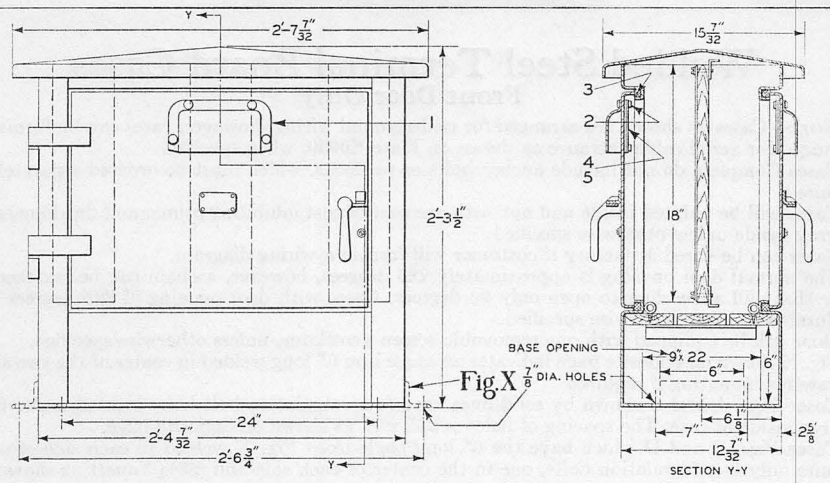
Cases Figs. A and C shown by solid lines have four foundation bolt holes located under floor boards inside of case. The spacing of holes is 24″ x 7″ as shown on opposite page.

Cases Figs. B and D which have the 6″ long angle irons Fig. X welded to each side of case, require only two foundation bolts, one in the center of each side and 2′6¾″ apart as shown on opposite page.

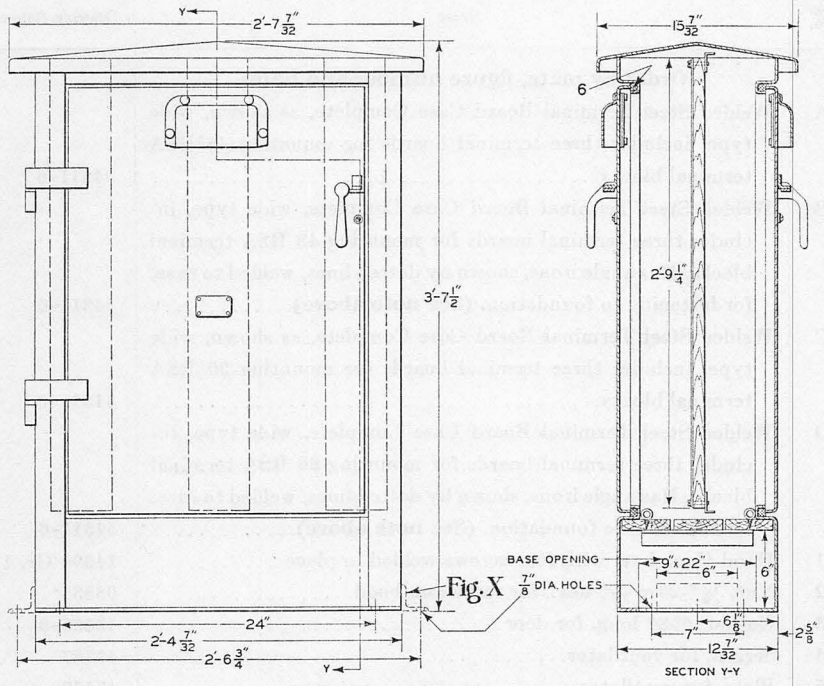
Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Welded Steel Terminal Board Case Complete, as shown, wide type, includes three terminal boards for mounting 48 RSA terminal blocks	54311–6
B	Welded Steel Terminal Board Case Complete, wide type, includes three terminal boards for mounting 48 RSA terminal blocks. Has angle irons, shown by dotted lines, welded to case, for fastening to foundation. **(See note above)**	54311–6
C	Welded Steel Terminal Board Case Complete, as shown, wide type, includes three terminal boards for mounting 90 RSA terminal blocks	54311–6
D	Welded Steel Terminal Board Case Complete, wide type, includes three terminal boards for mounting 90 RSA terminal blocks. Has angle irons, shown by dotted lines, welded to case, for fastening to foundation. **(See note above)**	54311–6
1	Hood Complete, with four screws welded in place	14604 Gr. 1
2	Nut, ¼″-20 x $\frac{7}{32}$″ hex., for screws on hood	0383
3	Gasket, 6′-8″ long, for door	43460–3
4	Screen, for ventilator	47527
5	Plate, for ventilator	47526
6	Gasket, 9′-4″ long, for door	43460-3

PLATE E0946



A-Without Fig. X
B-With Fig. X



C-Without Fig. X
D-With Fig. X

Welded Steel Terminal Board Cases, Front and Back Doors

March 1949 GENERAL RAILWAY SIGNAL COMPANY

Welded Steel Terminal Board Cases
Front and Back Doors

NOTE—Cases as shown are arranged for underground wiring; however, cases can be furnished arranged for aerial cable entrance as shown on Plate E0950, when specified.

Cases Complete do not include anchor bolts or padlocks, which must be ordered separately if required.

Cases will be painted inside and out with one coat of rust inhibiting primer and finishing coats of gray inside unless otherwise specified.

Cases can be wired at factory if customer will furnish a wiring diagram.

The normal door opening is approximately 225 degrees, however, a chain can be fastened to door that will allow door to open only 90 degrees. Cases with door opening of 225 degrees will be furnished unless otherwise specified.

Doors will be equipped with one removable screen ventilator, unless otherwise specified.

Fig. X shown on opposite page indicates an angle iron 6″ long welded in center of the two sides of case for mounting if required.

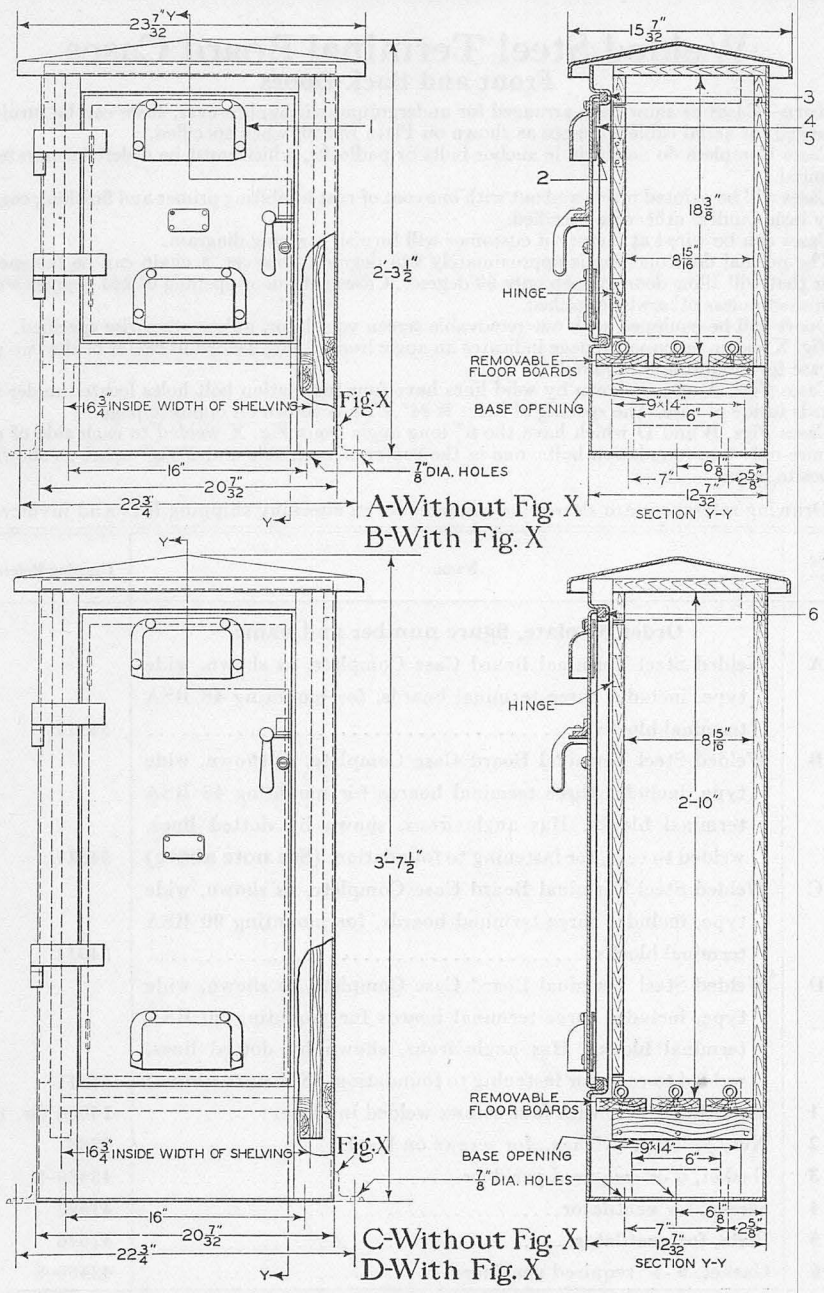
Cases Figs. A and C shown by solid lines have four foundation bolt holes located under floor boards inside of case. The spacing of holes is 24″ x 7″ as shown on opposite page.

Cases Figs. B and D which have the 6″ long angle irons Fig. X welded to each side of case, require only two foundation bolts, one in the center of each side and 2′6¾″ apart as shown on opposite page.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Welded Steel Terminal Board Case Complete, as shown, wide type, includes three terminal boards, for mounting 48 RSA terminal blocks	54311
B	Welded Steel Terminal Board Case Complete, as shown, wide type, includes three terminal boards for mounting 48 RSA terminal blocks. Has angle irons, shown by dotted lines, welded to case, for fastening to foundation. **(See note above)**	54311
C	Welded Steel Terminal Board Case Complete, as shown, wide type, includes three terminal boards, for mounting 90 RSA terminal blocks	54311
D	Welded Steel Terminal Board Case Complete, as shown, wide type, includes three terminal boards for mounting 90 RSA terminal blocks. Has angle irons, shown by dotted lines, welded to case, for fastening to foundation. **(See note above)**	54311
1	Hood Complete, with four screws welded in place	14604 Gr. 1
2	Nut, ¼″-20 x $\frac{7}{32}$″ hex., for screws on hood	0383
3	Gasket, 6′-8″ required per door	43460–3
4	Screen, for ventilator	47527
5	Plate, for ventilator	47526
6	Gasket, 9′-4″ required per door	43460–3

PLATE E0947



Welded Steel Track Cases, Front Door Only

March 1949 GENERAL RAILWAY SIGNAL COMPANY

Welded Steel Track Cases
Front Door Only

NOTE—Cases as shown are arranged for underground wiring; however, cases can be furnished arranged for aerial cable entrance as shown on Plate E0950, when specified.

Cases Complete do not include anchor bolts or padlocks, which must be ordered separately if required.

Cases will be painted inside and out with one coat of rust inhibiting primer and finishing coats of gray inside unless otherwise specified.

Cases can be wired at factory if customer will furnish a wiring diagram.

The normal door opening is approximately 225 degrees, however, a chain can be fastened to door that will allow door to open only 90 degrees. Cases with door opening of 225 degrees will be furnished unless otherwise specified.

Doors will be equipped with removable screen ventilators unless otherwise specified.

Fig. X shown on opposite page indicates an angle iron 6″ long welded in center of the two sides of case for mounting if required.

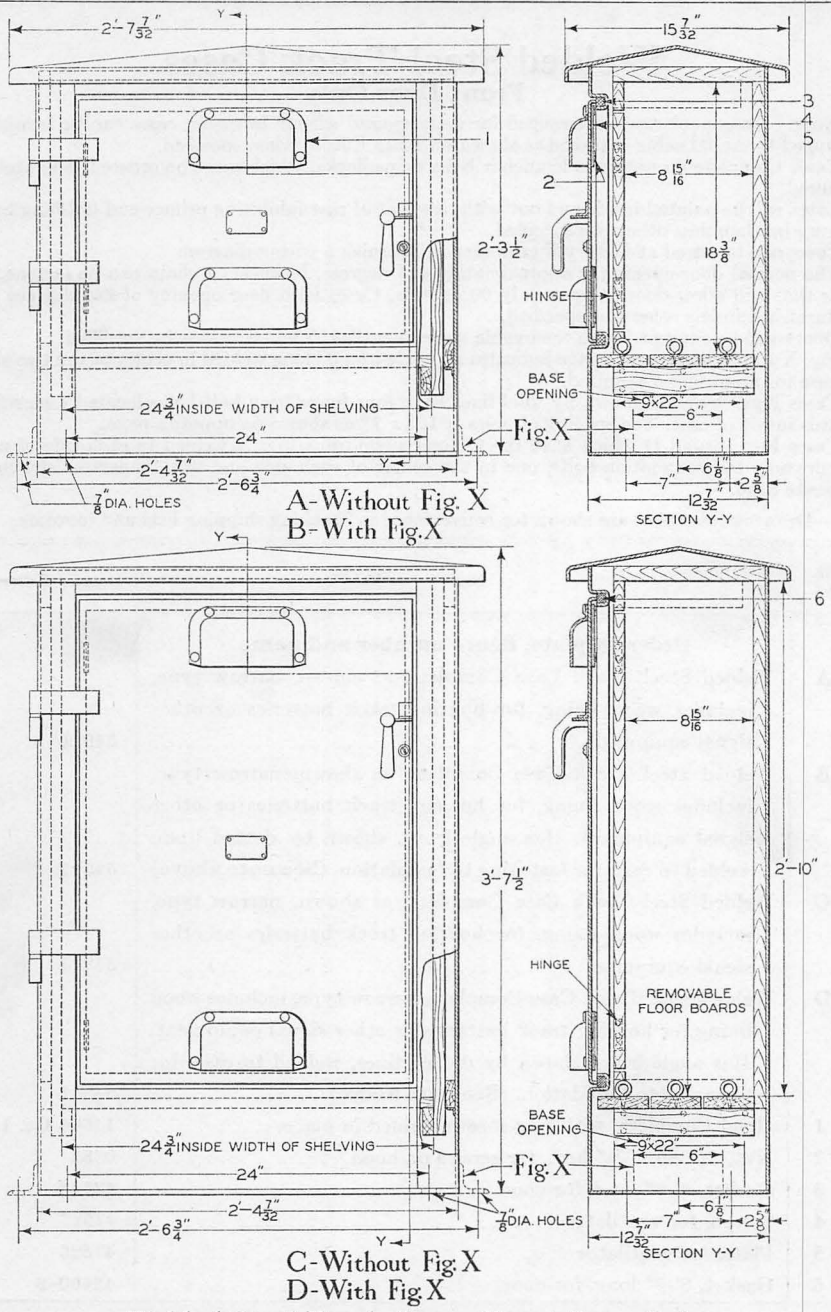
Cases Figs. A and C shown by solid lines have four foundation bolt holes located under floor boards inside of case. The spacing of holes is 16″ x 7″ as shown on opposite page.

Cases Figs. B and D which have the 6″ long angle irons Fig. X welded to each side of case, require only two foundation bolts, one in the center of each side and 22¾″ apart as shown on opposite page.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Welded Steel Track Case Complete, as shown, narrow type, includes wood lining, for housing track batteries or other signal equipment	54311
B	Welded Steel Track Case Complete, as shown, narrow type, includes wood lining, for housing track batteries or other signal equipment. Has angle irons, shown by dotted lines, welded to case, for fastening to foundation. **(See note above)**	54311
C	Welded Steel Track Case Complete, as shown, narrow type, includes wood lining, for housing track batteries or other signal equipment	54311
D	Welded Steel Track Case Complete, narrow type, includes wood lining for housing track batteries or other signal equipment. Has angle irons, shown by dotted lines, welded to case, for fastening to foundation. **(See note above)**	54311
1	Hood Complete, with four screws welded in place	14604 Gr. 1
2	Nut, ¼″-20 x $\frac{7}{32}$″ hex., for screws on hood	0383
3	Gasket, 5′-2″ long, for door	43460–3
4	Screen, for ventilator	47527
5	Plate, for ventilator	47526
6	Gasket, 8′-0″ long, for door	43460–3

PLATE E0949



Welded Steel Track Cases, Front Door Only

March 1949 GENERAL RAILWAY SIGNAL COMPANY

Welded Steel Track Cases
Front Door Only

NOTE—Cases as shown are arranged for underground wiring; however, cases can be furnished arranged for aerial cable entrance as shown on Plate E0950, when specified.

Cases Complete do not include anchor bolts or padlocks which must be ordered separately if required.

Cases will be painted inside and out with one coat of rust inhibiting primer and finishing coats of gray inside unless otherwise specified.

Cases can be wired at factory if customer will furnish a wiring diagram.

The normal door opening is approximately 225 degrees, however, a chain can be fastened to door that will allow door to open only 90 degrees. Cases with door opening of 225 degrees will be furnished unless otherwise specified.

Doors will be equipped with removable screen ventilators unless otherwise specified.

Fig. X shown on opposite page indicates an angle iron 6″ long welded in center of the two sides of case for mounting if required.

Cases Figs. A and C shown by solid lines have four foundation bolt holes located under floor boards inside of case. The spacing of holes is 24″ x 7″ as shown on opposite page.

Cases Figs. B and D which have the 6″ long angle irons Fig. X welded to each side of case, require only two foundation bolts, one in the center of each side and 2′6¾″ apart as shown on opposite page.

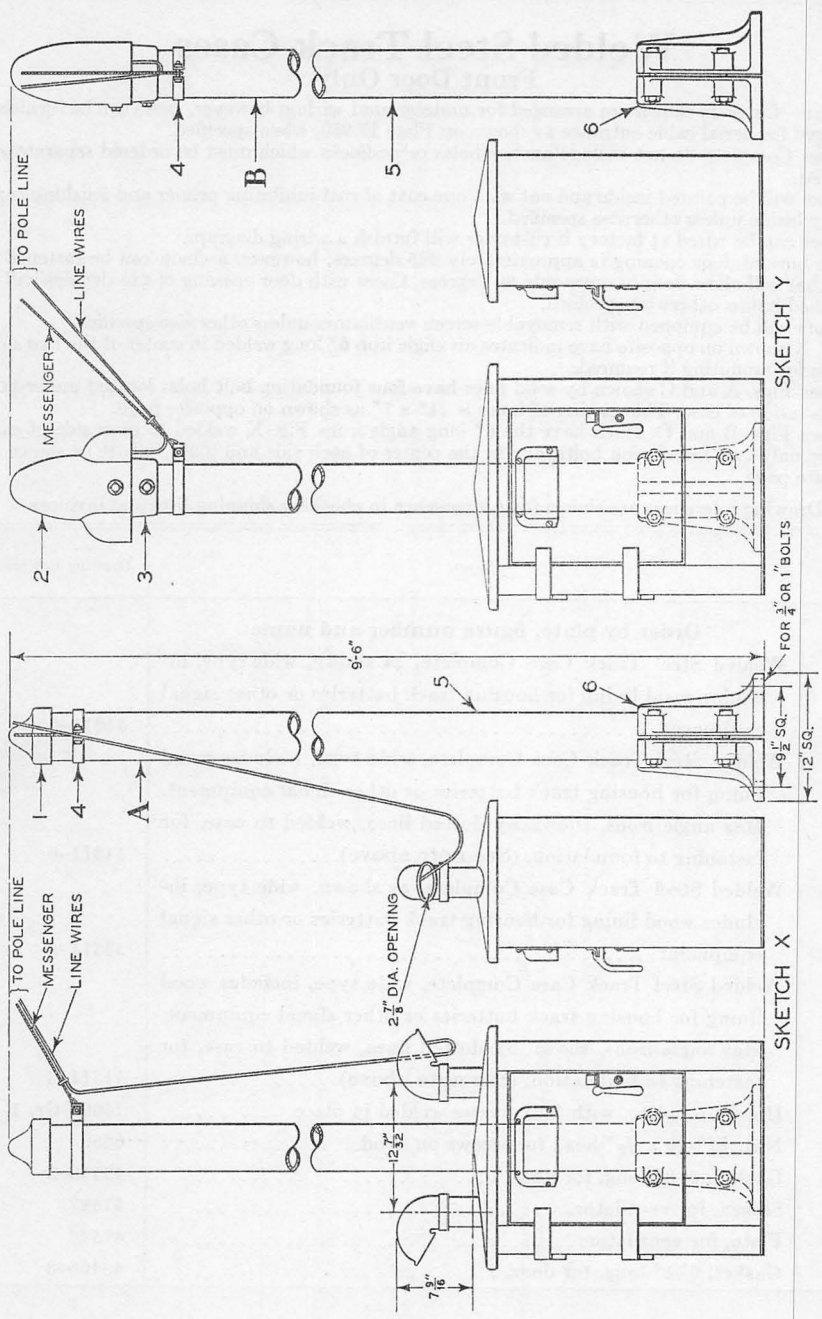
Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Welded Steel Track Case Complete, as shown, wide type, includes wood lining for housing track batteries or other signal equipment	54311–6
B	Welded Steel Track Case Complete, wide type, includes wood lining for housing track batteries or other signal equipment. Has angle irons, shown by dotted lines, welded to case, for fastening to foundation. **(See note above)**	54311–6
C	Welded Steel Track Case Complete, as shown, wide type, includes wood lining for housing track batteries or other signal equipment	54311–6
D	Welded Steel Track Case Complete, wide type, includes wood lining for housing track batteries or other signal equipment. Has angle irons, shown by dotted lines, welded to case, for fastening to foundation. **(See note above)**	54311–6
1	Hood Complete, with four screws welded in place	14604 Gr. 1
2	Nut, ¼″-20 x $\frac{7}{32}$″ hex., for screws on hood	0383
3	Gasket, 6′-8″ long, for door	43460–3
4	Screen, for ventilator	47527
5	Plate, for ventilator	47526
6	Gasket, 9′-4″ long, for door	43460–3

PLATE E0950

GENERAL RAILWAY SIGNAL COMPANY

March 1949



Aerial Cable Entrance for Welded Steel Cases

March 1949 GENERAL RAILWAY SIGNAL COMPANY

Aerial Cable Entrance for Welded Steel Cases

NOTE—The sketches on opposite page show methods of bringing aerial line drop into welded steel cases shown on Plates E0943, E0945, E0946, E0947 and E0949.

Sketch X shows case with one or two outlets, as specified, for bringing aerial line drop from cable post into top of case.

Sketch Y shows case and cable post for bringing aerial line drop through cable post and into bottom of case.

When ordering cases from Plates E0943, E0945, E0946, E0947 and E0949 for aerial cable entrance as shown in Sketch X, specify whether one or two outlets are required and whether cable post is required.

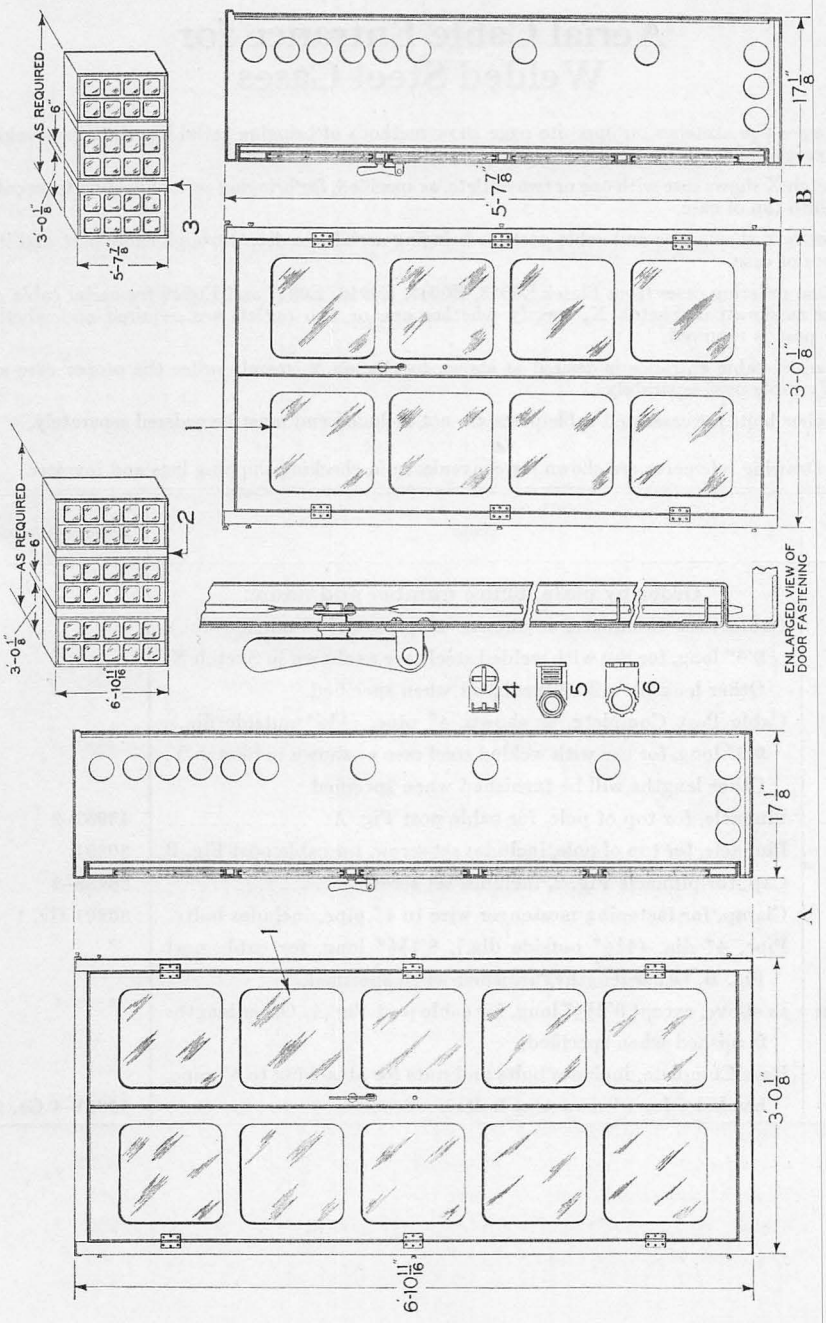
If aerial cable entrance is desired as shown by Sketch Y, merely order the proper case and specify cable post separately.

Anchor bolts for cases and cable posts are not included and must be ordered separately.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Cable Post Complete, as shown, 4″ pipe, (4½″ outside dia.), 9′6″ long, for use with welded steel case as shown in Sketch X. Other lengths will be furnished when specified.	
B	Cable Post Complete, as shown, 4″ pipe, (4½″ outside dia.), 9′6″ long, for use with welded steel case as shown in Sketch Y. Other lengths will be furnished when specified.	
1	Pinnacle, for top of pole, for cable post Fig. A.....	43957–2
2	Pinnacle, for top of pole, includes set screw, for cable post Fig. B	30391
3	Cap, for pinnacle Fig. 2, includes set screw.....	36288–2
4	Clamp, for fastening messenger wire to 4″ pipe, includes bolts.	36291 Gr. 1
5	Pipe, 4″ dia. (4½″ outside dia.), 8′7½″ long, for cable post Fig. B. Other lengths furnished when specified.	
5a	as above, except 9′2½″ long, for cable post Fig. A. Other lengths furnished when specified.	
6	Base Complete, includes bolts and nuts for attaching to 4″ pipe, has holes for 1″ mounting bolts.....	43951–4 Gr. 2

PLATE E0951-1



Tower Cases

Welded Steel Tower Cases

NOTE—Tower Cases will be painted inside and out with one coat of rust inhibiting primer and a finishing coat of green wrinkle, unless otherwise specified.

Tower Cases can be furnished with shelving arrangements as shown on Plates E0952-1, E0953-1 and E0954-1. If other shelving is desired order must specify the type and quantity of all apparatus to be housed or furnish information from which it can be determined.

Tower Cases Complete do not include any apparatus such as terminals, fuse blocks, resistors, transformers, etc. This apparatus must be specified on order together with quantity of each.

Tower Cases can be furnished with or without 3″ diameter holes for wire entrances in either or both sides of case. If holes are required specify whether required for right hand, left hand or both sides of case. If a greater or lesser number than twelve holes for high cases or eleven holes for low cases are required it must be so specified on order.

Tower Cases can be assembled in towers side by side in a neat and compact arrangement by the use of screens depicted in the small cut on opposite page.

Screens, when required must be ordered separately. These screens can be furnished in any one of the following combinations; front only; front and back; front and cover; front, back and cover.

See Plates E0952-1, E0953-1 and E0954-1 for shelvings.

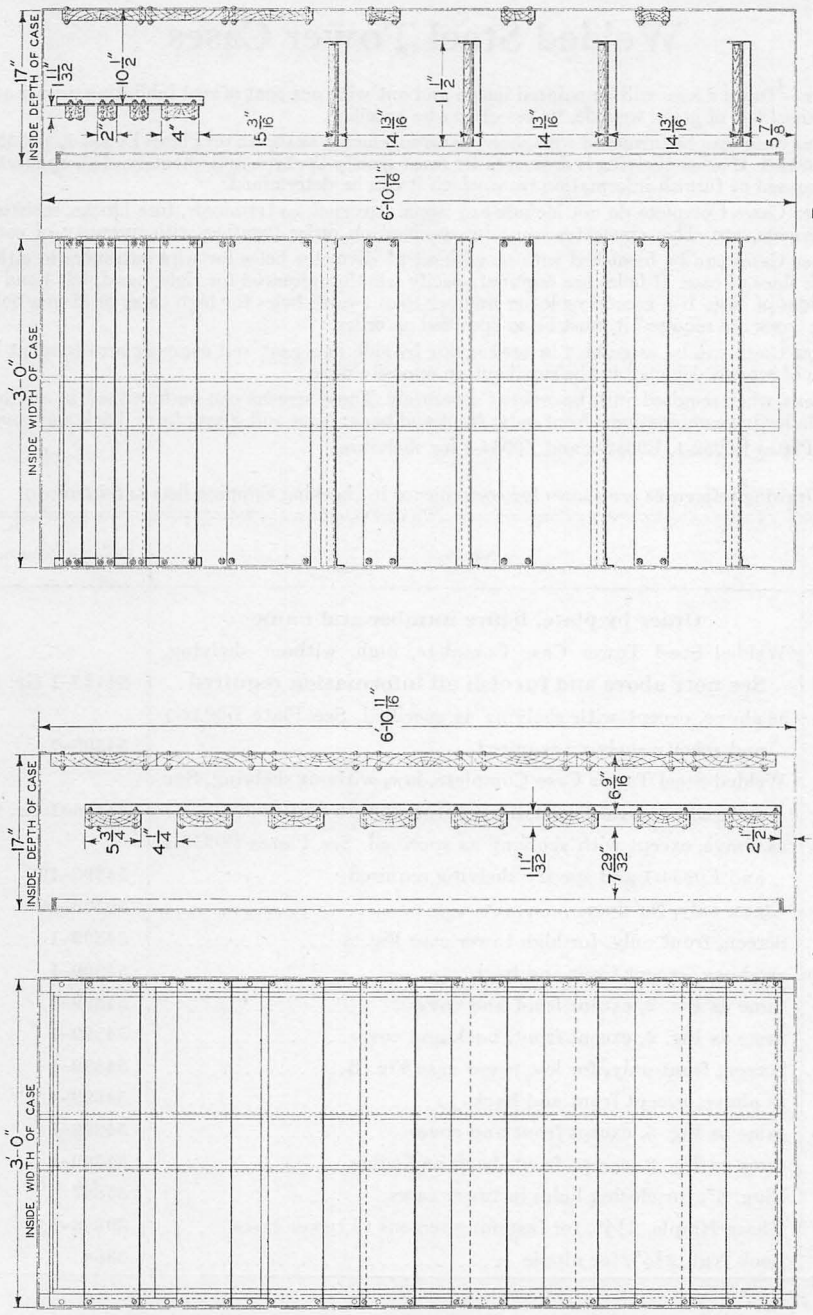
Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Welded Steel Tower Case Complete, high, without shelving. **See note above and furnish all information required**	54425–1 Gr. 1
A1	as above, except with shelving as specified. See Plate E0952-1 and specify shelving required	54395–7
B	Welded Steel Tower Case Complete, low, without shelving. **See note above and furnish all information required**	54425–1 Gr. 2
B1	as above, except with shelving as specified. See Plates E0953-1 and E0954-1 and specify shelving required	54395–10
1	Glass, only, for door	50538–49
2	Screen, front only, for high tower case Fig. A	54399–1
2a	as above, except front and back	54399–1
2b	same as Fig. 2, except front and cover	54399–1
2c	same as Fig. 2, except front, back and cover	54399–1
3	Screen, front only, for low tower case Fig. B	54399–1
3a	as above, except front and back	54399–1
3b	same as Fig. 3, except front and cover	54399–1
3c	same as Fig. 3, except front, back and cover	54399–1
4	Plug, 3″, for closing holes in tower cases	55837
5	Chase Nipple, 2½″, for fastening screens to tower cases	39998–1
6	Lock Nut, 2½″, for nipple	0868

PLATE E0952-1

GENERAL RAILWAY SIGNAL COMPANY

March 1949



Shelvings for Welded Steel Tower Cases

March 1949 GENERAL RAILWAY SIGNAL COMPANY

Shelvings

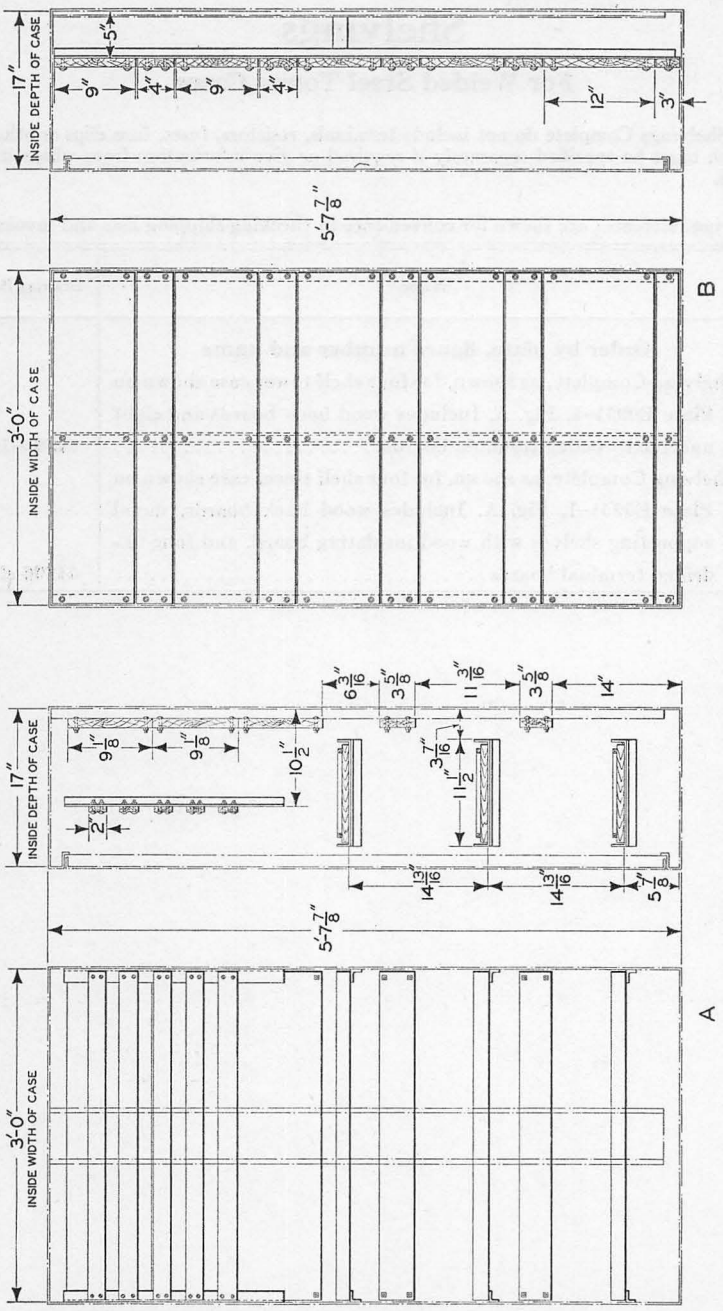
For Welded Steel Tower Cases

NOTE—Shelvings Complete do not include terminals, resistors, fuses, fuse clips or other apparatus, which must be specified separately if required or give information from which it can be determined.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Shelving Complete, as shown, for four shelf tower case shown on Plate E0951–1, Fig. A. Includes wood back boards and eight undrilled wooden terminal boards	54396–14 Gr. 1
B	Shelving Complete, as shown, for four shelf tower case shown on Plate E0951–1, Fig. A. Includes wood back boards, metal supporting shelves with wood insulating board, and four undrilled terminal boards	54396–22 Gr. 1

PLATE E0953-1



Shelvings for Welded Steel Tower Cases

March 1949 GENERAL RAILWAY SIGNAL COMPANY

Shelvings

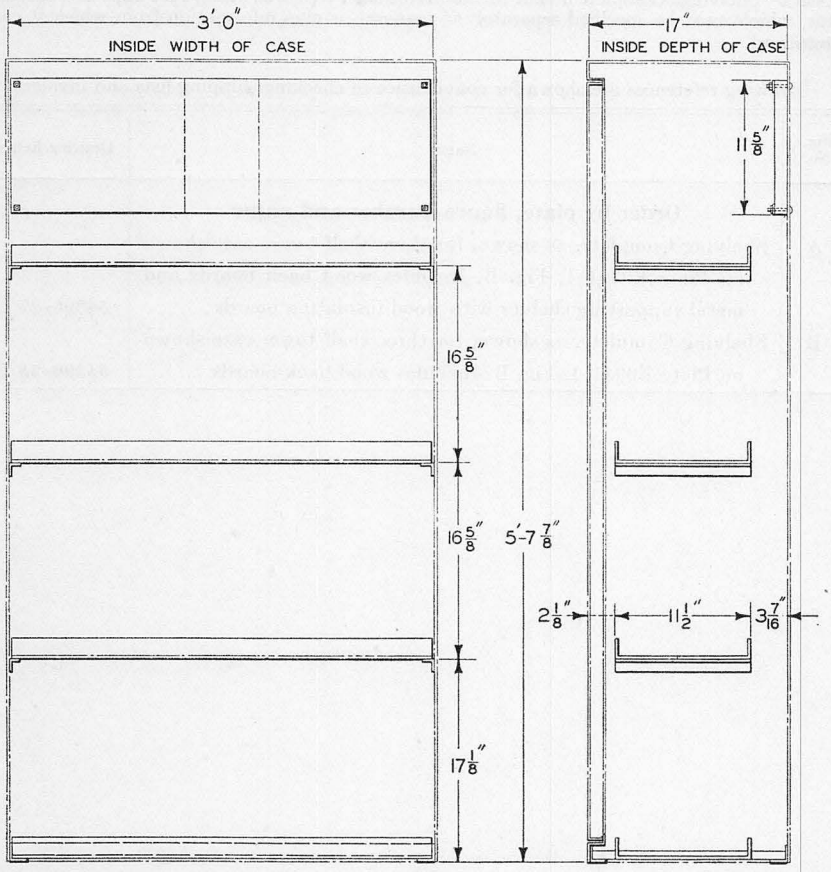
For Welded Steel Tower Cases

NOTE—Shelvings Complete do not include terminals, resistors, fuses, fuse clips or other apparatus, which must be specified separately if required or give information from which it can be determined.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Shelving Complete, as shown, for three shelf tower case shown on Plate E0951–1, Fig. B. Includes wood back boards and metal supporting shelves with wood insulating boards.....	54396–27 Gr. 2
B	Shelving Complete, as shown, for three shelf tower case shown on Plate E0951–1, Fig. B. Includes wood back boards.....	54396–35 Gr. 1

PLATE E0954-1



A

Shelving for Welded Steel Tower Cases

March 1949 GENERAL RAILWAY SIGNAL COMPANY

Shelving

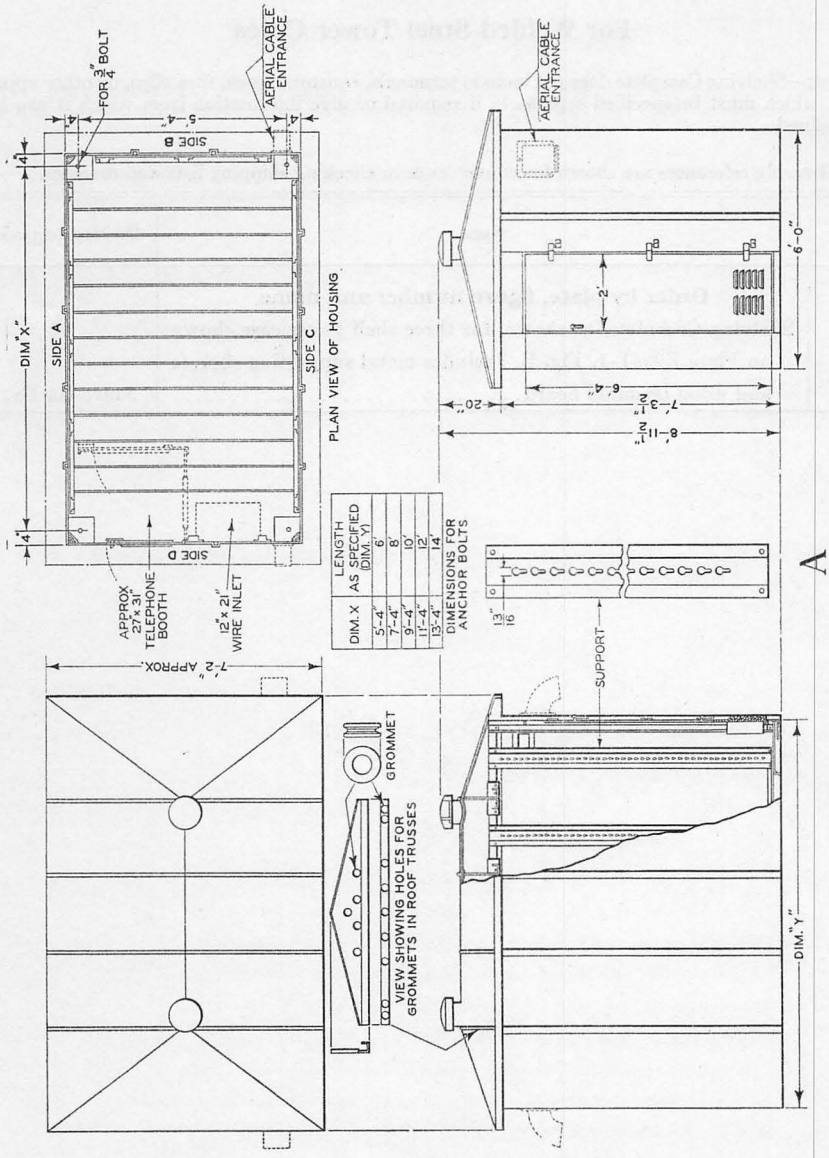
For Welded Steel Tower Cases

NOTE—Shelving Complete does not include terminals, resistors, fuses, fuse clips, or other apparatus, which must be specified separately if required or give information from which it can be determined.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Shelving Complete, as shown, for three shelf tower case shown on Plate E0951–1, Fig. B. Includes metal supporting shelves and wood terminal board.....	54396–13 Gr. 1

PLATE E0956



A

Welded Steel Housings, 6 Ft. Wide

June 1954 GENERAL RAILWAY SIGNAL COMPANY

Welded Steel Housings
6 Ft. Wide

NOTE—Welded Steel Housings shown on this plate are 6 ft. wide and can be furnished in the following lengths: 6, 8, 10, 12 and 14 ft.

For 8 ft. wide housings see Plate E0957.

Housings can be wired at the factory if customer will furnish a wiring diagram.

We recommend that this housing be shipped assembled; however, it may be shipped knocked down.

A means for lifting the house is provided by removing the ventilator caps on the roof and inserting a chain through each ventilator and attaching it to a support in the top of the housing. A hoist can then be used to move the housing.

The housing is equipped with vertical steel supports having slotted bolt head holes to which mounting boards for supporting relays, busses, terminals, etc., may be attached.

Housings will be painted inside and out with one coat of rust inhibiting primer and finishing coats of gray inside unless otherwise specified. Wooden battery shelves, shelving, etc., will be painted gray unless otherwise specified.

The following items are not included with housings and must be specified separately if required:

1—Window, 24″ high and 17″ wide, located in Side B, opposite door. Two types of windows are available.
   (a) with a No. 30 mesh copper screen (no glass). A hinged metal door, which opens from outside, is provided for closing window. The door is equipped with a latch and means for padlocking.
   (b) Glass window, without hinged metal door.
2—Electric lighting system.
3—Terminal, buss bar and relay mounting boards.
4—Telephone booth.
5—Aerial cable entrances. (Specify at which corners entrances are to be located).
6—Grommets in roof trusses.
7—Rubber mat on floor.
8—Anchor bolts.
9—An additional door can be furnished in Side B.

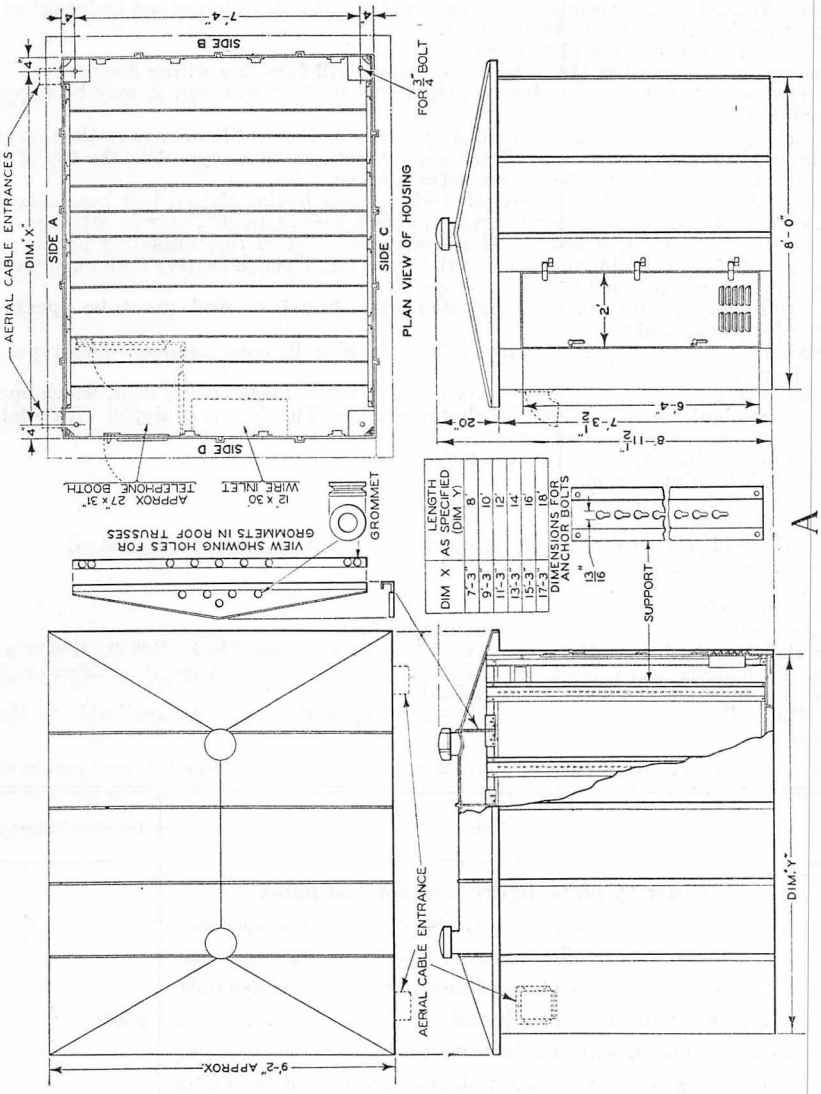
For shelving, battery shelves, mounting boards, etc., see Plates E0958, E0959 and E0960. If mounting boards are to be drilled at factory, order must specify drilling or give information from which it can be determined.

See Plates E0958-1, E0960-1 and E0960-2 for Type B relay racks applicable to these housings.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Welded Steel Housing Complete, 6 ft. wide, length as specified, includes only the following: steel floor, celotex lining, ventilators in roof and door and painted as stated above. **See note above for items not included**	55676
A1	as above, except with terminal boards, buss bar boards, relay mounting boards and battery shelving as specified. See Plates E0958, E0958-1, E0959 and E0960 showing inside arrangement of housing and specify equipment required or give information from which it can be determined. **See note above and give all information required**	55675

PLATE E0957



Welded Steel Housings, 8 Ft. Wide

Welded Steel Housings
8 Ft. Wide

NOTE—Welded Steel Housings shown on this plate are 8 ft. wide and can be furnished in the following lengths: 8, 10, 12, 14, 16 and 18 ft.

For 6 ft. wide housings see Plate E0956.

Housings can be wired at the factory if customer will furnish a wiring diagram.

We recommend that this housing be shipped assembled; however, it may be shipped knocked down.

A means for lifting the house is provided by removing the ventilator caps on the roof and inserting a chain through each ventilator and attaching it to a support in the top of the housing. A hoist can then be used to move the housing.

The housing is equipped with vertical steel supports having slotted bolt head holes to which mounting boards for supporting relays, busses, terminals, etc., may be attached.

Housings will be painted inside and out with one coat of rust inhibiting primer and finishing coats of gray inside unless otherwise specified. Wooden battery shelves, shelving, etc., will be painted gray unless otherwise specified.

The following items are not included with housings and must be specified separately if required:

1—Window 24″ high and 17″ wide, located in Side B, opposite door. Two types of windows are available.
   (a) with a No. 30 mesh copper screen (no glass). A hinged metal door, which opens from outside, is provided for closing window. The door is equipped with a latch and means for padlocking.
   (b) Glass Window, without hinged metal door.

2—Electric lighting system.

3—Terminal, buss bar and relay mounting boards.

4—Telephone booth.

5—Aerial cable entrances. (Specify at which corners entrances are to be located).

6—Grommets in roof trusses.

7—Rubber mat on floor.

8—Anchor bolts.

9—An additional door can be furnished in Side B or back of terminal rack in Side D if specified.

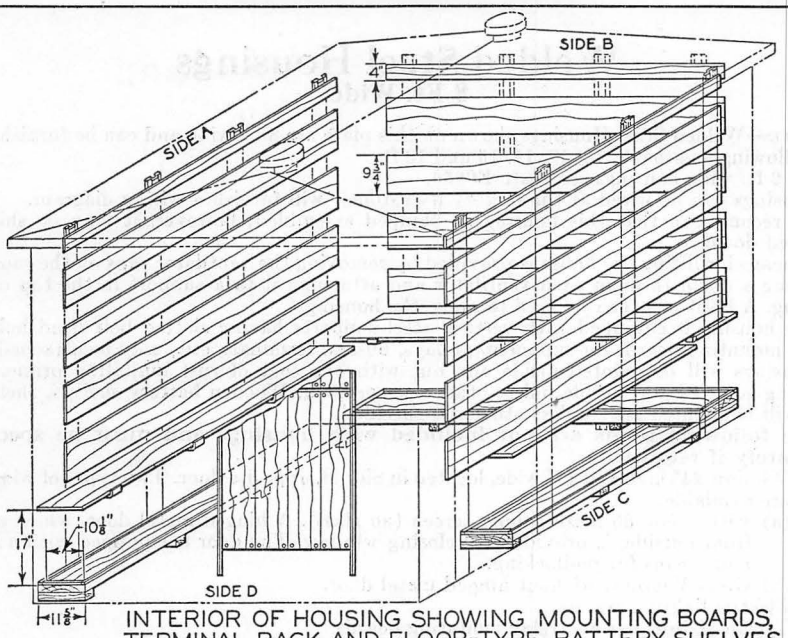
For shelving, battery shelves, mounting boards, etc., see Plates E0958, E0959 and E0960. If mounting boards are to be drilled at factory, order must specify drilling or give information from which it can be determined.

See Plates E0958-2, E0960-1 and E0960-2 for Type B relay racks applicable to these housings.

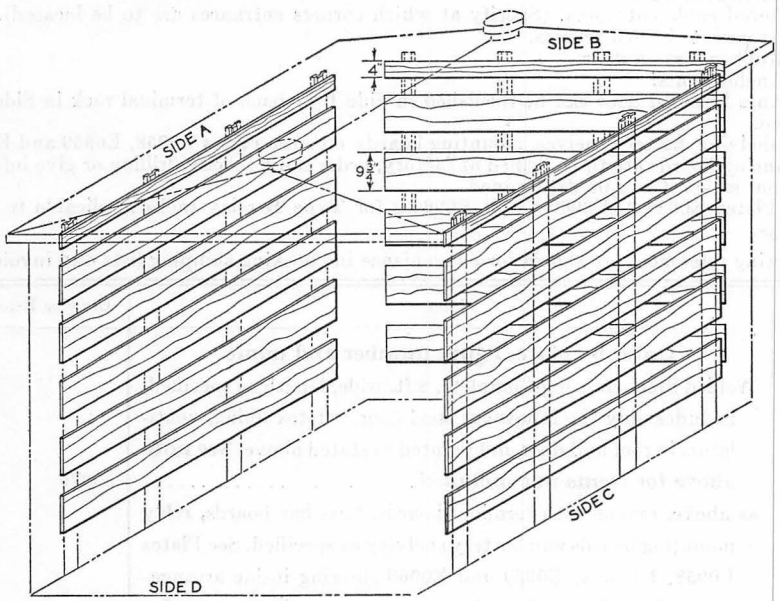
Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Welded Steel Housing Complete, 8 ft. wide, length as specified, includes only the following: steel floor, celotex lining, ventilators in roof and door and painted as stated above. **See note above for items not included**	55676
A1	as above, except with terminal boards, buss bar boards, relay mounting boards and battery shelving as specified. See Plates E0958, E0958-2, E0959 and E0960 showing inside arrangement of housing and specify equipment required or give information from which it can be determined. **See note above and give all information required**	55675

PLATE E0958



INTERIOR OF HOUSING SHOWING MOUNTING BOARDS, TERMINAL RACK AND FLOOR-TYPE BATTERY SHELVES



INTERIOR OF HOUSING SHOWING MOUNTING BOARDS (TERMINAL RACK OMITTED IN SKETCH)

Battery Shelves and Mounting Boards for Welded Steel Housings

March 1949 GENERAL RAILWAY SIGNAL COMPANY

Battery Shelves and Mounting Board Combinations

For 6 Ft. and 8 Ft. Wide Welded Steel Housings

NOTE—The sketches shown on opposite page show the maximum number of buss bar boards, relay mounting boards, etc., that can be assembled on Sides A, B, and C.

The vertical steel supports for holding the boards have slotted holes drilled on two inch centers shown on Plates E0956 and E0957, so that boards may be spaced at any desired location.

The method of attaching boards to supports is shown on Plate E0959.

All boards furnished will be of wood unless otherwise specified. However, when buss bars are required, we will furnish the 4″ board of ebony asbestos with busses as specified, see Plate E0959 for description of buss bars. If buss bars are required, the number of posts required and location must be specified.

See Plate E0960, Sketches X, Y, and Z for terminal racks and specify which type is desired for Side D.

Wooden battery racks and mounting boards will be painted gray unless otherwise specified.

The table below shows lengths of battery racks on Sides A, B, and C for various lengths of housings.

Width of Housing	Length of Housing	Side A		Side B	Side C
		With Telephone Booth	Without Telephone Booth		
8 ft.	8 ft.	4 ft.	6′-6″	7′-6″	4′-6″
8 ft.	10 ft.	6 ft.	8′-6″	7′-6″	6′-6″
8 ft.	12 ft.	8 ft.	10′-6″	7′-6″	8′-6″
8 ft.	14 ft.	10 ft.	12′-6″	7′-6″	10′-6″
8 ft.	16 ft.	12 ft.	14′-6″	7′-6″	12′-6″
8 ft.	18 ft.	14 ft.	16′-6″	7′-6″	14′-6″
6 ft.	6 ft.	2 ft.	4′-6″	5′-6″	2′-6″
6 ft.	8 ft.	4 ft.	6′-6″	5′-6″	4′-6″
6 ft.	10 ft.	6 ft.	8′-6″	5′-6″	6′-6″
6 ft.	12 ft.	8 ft.	10′-6″	5′-6″	8′-6″
6 ft.	14 ft.	10 ft.	12′-6″	5′-6″	10′-6″

(Continued on following page)

PLATE E0958

Battery Shelves and Mounting Board Combinations

For 6 Ft. and 8 Ft. Wide Welded Steel Housings

The table below shows relay capacity (Type K) of each board and total relay capacity of housing using floor-type battery racks as shown in top sketch.

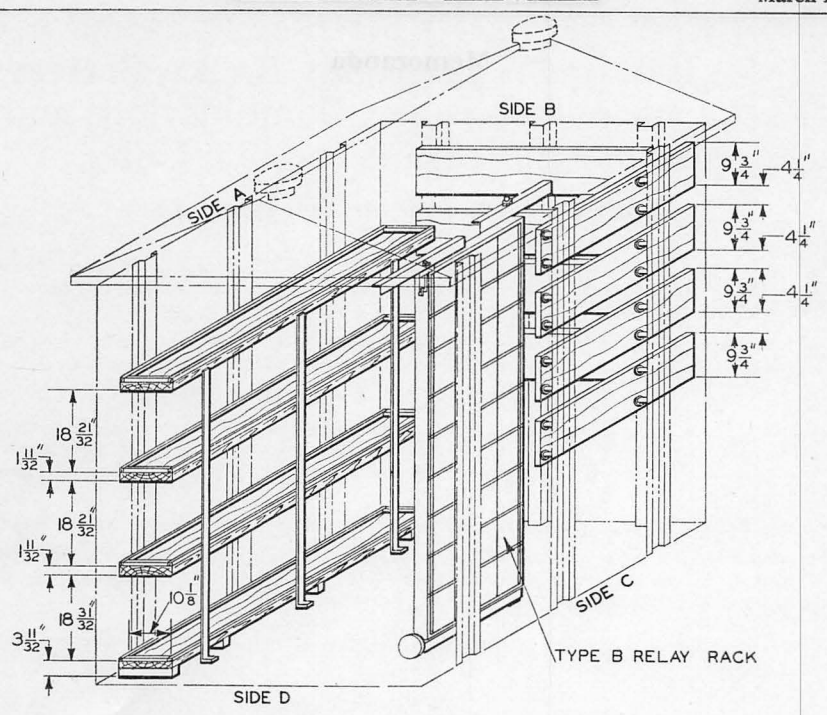
The relay capacity of boards is based on 1 ft. lineal space for each relay.

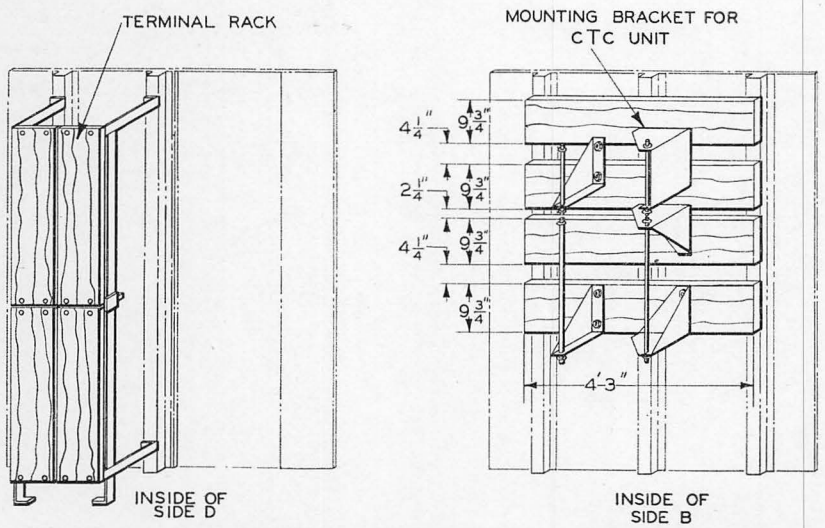
Width of Housing	Length of Housing	Length of Mounting Boards	Relay Capacity (Type K) of Each Board				Total Relay Capacity (Type K) of Housing	
					Side A			
			Side C	Side B	With Telephone Booth	Without Telephone Booth	With Telephone Booth	Without Telephone Booth
8 ft.	8 ft.	7 ft.	7	5	5	7	68	76
8 ft.	10 ft.	9 ft.	9	5	7	9	84	92
8 ft.	12 ft.	11 ft.	11	5	9	11	100	108
8 ft.	14 ft.	13 ft.	13	5	11	13	116	124
8 ft.	16 ft.	15 ft.	15	5	13	15	132	140
8 ft.	18 ft.	17 ft.	17	5	15	17	148	156
6 ft.	6 ft.	5 ft.	4	3	3	5	40	48
6 ft.	8 ft.	7 ft.	6	3	5	7	56	64
6 ft.	10 ft.	9 ft.	8	3	7	9	72	80
6 ft.	12 ft.	11 ft.	10	3	9	11	88	96
6 ft.	14 ft.	13 ft	12	3	11	13	104	112

When ordering housings with buss bar boards, relay mounting boards, etc., order must specify the quantity and location of each board required and if boards are to be drilled, customer must furnish a drilling plan.

Memoranda

PLATE E0958-1





Type B Swing Type Relay Racks for Welded Steel Housings

March 1949 GENERAL RAILWAY SIGNAL COMPANY

Type B Swing Type Relay Racks, Battery Racks, Mounting Board Combinations and Mounting Brackets for cTc Units

For 6 Ft. Wide Welded Steel Housings

NOTE—The sketches shown on opposite page show a typical layout of Type B swing type relay racks, battery racks, terminal boards and mounting brackets for one 16 way and one 32 way cTc unit for a 6 ft. wide housing.

The vertical steel supports for holding the boards have slotted holes drilled on two inch centers shown on Plates E0956 and E0957, so that boards may be spaced at any desired location.

The method of attaching boards to supports is shown on Plate E0959.

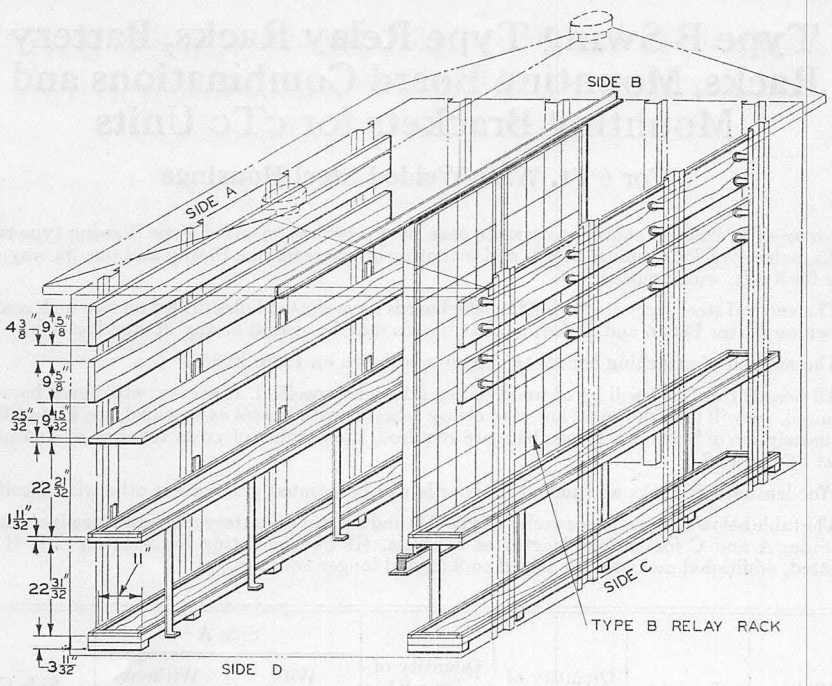
All boards furnished will be of wood unless otherwise specified. However, when buss bars are required, we will furnish the 4″ board of ebony asbestos with busses as specified, see Plate E0959 for description of buss bars. If buss bars are required, the number of posts required and location must be specified.

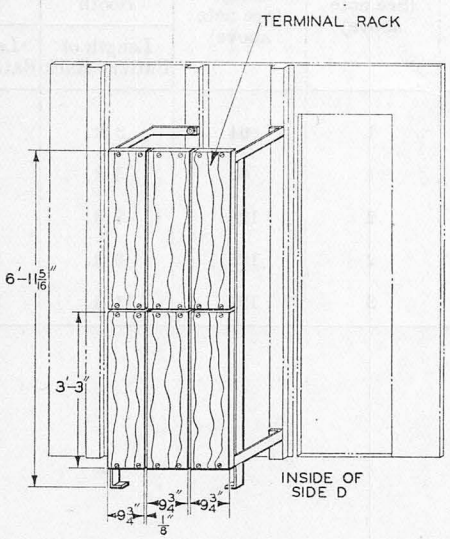
Wooden battery racks and mounting boards will be painted gray unless otherwise specified.

The table below shows relay capacity (Type B1) and lengths of battery racks and terminal boards on Sides A and C for various lengths of housings. (If cTc mounting brackets on Side B are omitted, additional racks can be added to 8 ft. and longer housings.)

Width of Housing	Length of Housing	Quantity of Relay Racks (See note above)	Quantity of Type B1 Relays (See note above)	Side A		Side C Terminal Boards
				With Telephone Booth	Without Telephone Booth	
				Length of Battery Rack	Length of Battery Rack	
6 ft.	6 ft.	1	64	3 ft.	5′-6″	3 ft.
6 ft.	8 ft.	1	64	5 ft.	7′-6″	5 ft.
6 ft.	10 ft.	2	128	7 ft.	9′-6″	7 ft.
6 ft.	12 ft.	2	128	9 ft.	11′-6″	9 ft.
6 ft.	14 ft.	3	192	11 ft.	13′-6″	11 ft.

PLATE E0958-2





Type B Spring Mounted Relay Racks for Welded Steel Housings

Type B Spring Mounted Relay Racks, Battery Racks and Terminal Board Combinations

For 8 Ft. Wide Welded Steel Housings

NOTE—The sketches shown on opposite page show a typical layout of spring mounted Type B relay racks, battery racks and terminal boards for an 8 ft. wide housing.

The vertical steel supports for holding the boards have slotted holes drilled on two inch centers shown on Plates E0956 and E0957, so that boards may be spaced at any desired location.

The method of attaching boards to supports is shown on Plate E0959.

All boards furnished will be of wood unless otherwise specified. However, when buss bars are required, we will furnish the 4″ board of ebony asbestos with busses as specified, see Plate E0959 for description of buss bars. If buss bars are required, the number of posts required and location must be specified.

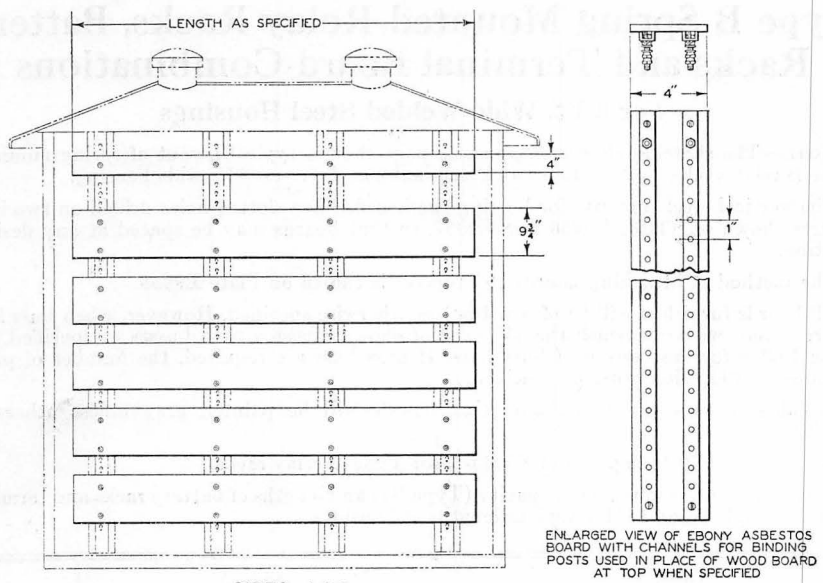
Wooden battery racks and mounting boards will be painted gray unless otherwise specified.

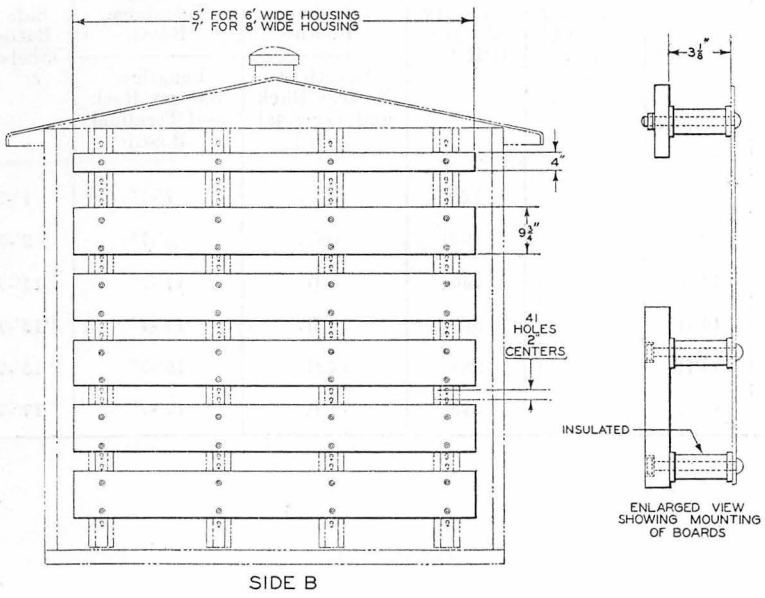
See Plate E0960-1, Fig. B and E0960-2, for Type B relay racks.

The table below shows relay capacity (Type B1) and lengths of battery racks and terminal boards on Sides A and C for various lengths of housings.

Width of Housing	Length of Housing	Quantity of Relay Racks	Quantity of Type B1 Relays	Side A		Side C Battery Shelves
				With Telephone Booth	Without Telephone Booth	
				Length of Battery Rack and Terminal Board	Length of Battery Rack and Terminal Board	
8 ft.	8 ft.	2	128	4 ft.	7′-7″	7′-7″
8 ft.	10 ft.	3	192	6 ft.	9′-7″	9′-7″
8 ft.	12 ft.	4	256	8 ft.	11′-7″	11′-7″
8 ft.	14 ft.	5	320	10 ft.	13′-7″	13′-7″
8 ft.	16 ft.	6	384	12 ft.	15′-7″	15′-7″
8 ft.	18 ft.	7	448	14 ft.	17′-7″	17′-7″

PLATE E0959





Mounting Boards for Welded Steel Housings

March 1949 GENERAL RAILWAY SIGNAL COMPANY

Mounting Boards

For 6 Ft. and 8 Ft. Wide Welded Steel Housings For Sides A, B, and C

NOTE—The sketches shown on opposite page show the maximum number of buss bar boards, relay mounting boards, etc., that can be assembled on Sides A, B, and C.

The vertical steel supports for holding the boards have slotted holes drilled on two inch centers, shown on Plates E0956 and E0957, so that boards may be spaced at any desired location.

The method of attaching boards to supports is shown by enlarged view.

All boards furnished will be of wood unless otherwise specified. However, when buss bars are required, we will furnish the 4″ board of ebony asbestos with busses as specified.

Buss bars consist of channels with binding posts assembled on 1″ centers, in lengths up to 3 ft., as shown by enlarged view.

If buss bars are required, the number of posts required and location must be specified.

Wooden mounting boards will be painted gray unless otherwise specified.

The relay capacity (Type K) of boards is based on 1 ft. lineal space for each relay.

The table below shows lengths of mounting boards for Sides A, B, and C for various lengths of housings.

Width of Housing	Length of Housing	Length of Mounting Boards			
		Side C	Side B	Side A	
				With Telephone Booth	Without Telephone Booth
8 ft.	8 ft.	7 ft.	5 ft.	5 ft.	7 ft.
8 ft.	10 ft.	9 ft.	5 ft.	7 ft.	9 ft.
8 ft.	12 ft.	11 ft.	5 ft.	9 ft.	11 ft.
8 ft.	14 ft.	13 ft.	5 ft.	11 ft.	13 ft.
8 ft.	16 ft.	15 ft.	5 ft.	13 ft.	15 ft.
8 ft.	18 ft.	17 ft.	5 ft.	15 ft.	17 ft.
6 ft.	6 ft.	5 ft.	3 ft.	3 ft.	5 ft.
6 ft.	8 ft.	7 ft.	3 ft.	5 ft.	7 ft.
6 ft.	10 ft.	9 ft.	3 ft.	7 ft.	9 ft.
6 ft.	12 ft.	11 ft.	3 ft.	9 ft.	11 ft.
6 ft.	14 ft.	13 ft.	3 ft.	11 ft.	13 ft.

(*Continued on following page*)

GENERAL RAILWAY SIGNAL COMPANY March 1949

Mounting Boards

For 6 Ft. and 8 Ft. Wide Welded Steel Housings For Sides A, B and C

The table below shows relay capacity of each board and total relay capacity (Type K) of housing.

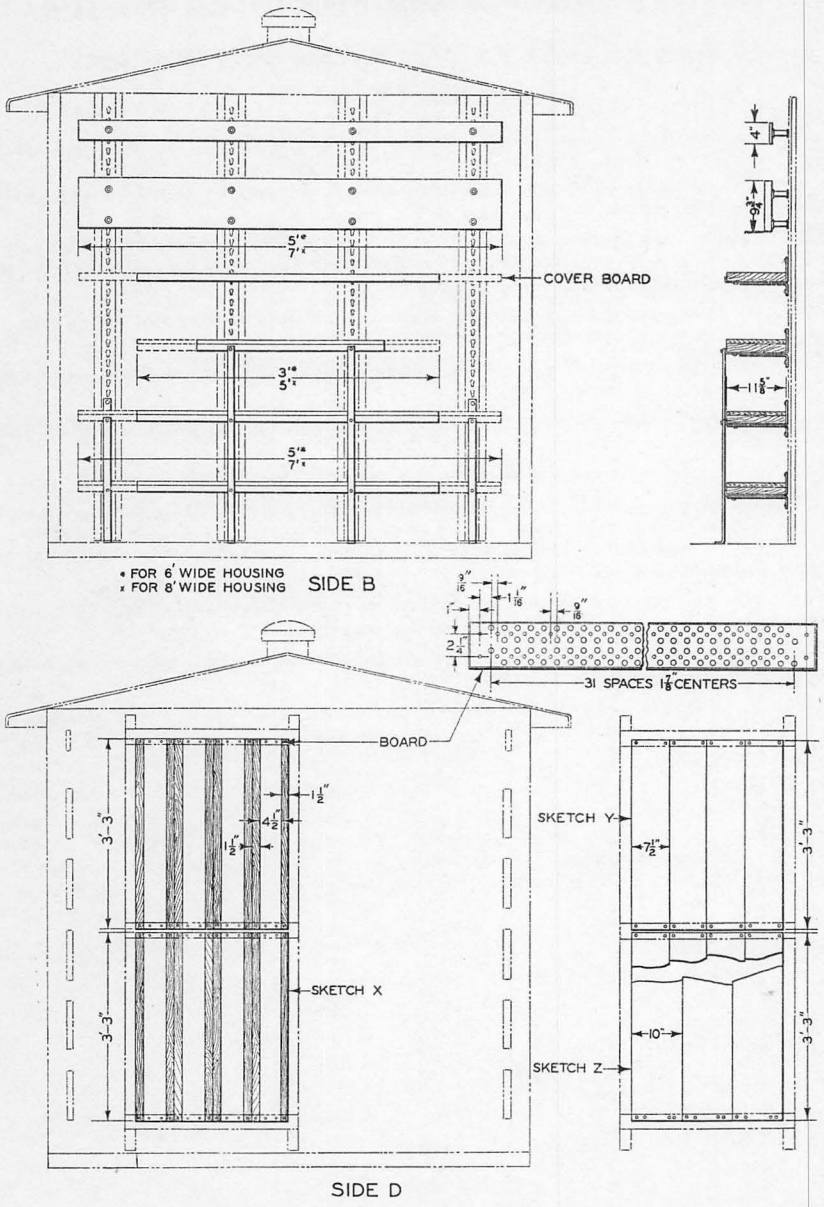
Width of Housing	Length of Housing	Relay Capacity (Type K) of Each Board				Total Relay Capacity (Type K) of Housing	
				Side A			
		Side C	Side B	With Telephone Booth	Without Telephone Booth	With Telephone Booth	Without Telephone Booth
8 ft.	8 ft.	7	5	5	7	85	95
8 ft.	10 ft.	9	5	7	9	105	115
8 ft.	12 ft.	11	5	9	11	125	135
8 ft.	14 ft.	13	5	11	13	145	155
8 ft.	16 ft.	15	5	13	15	165	175
8 ft.	18 ft.	17	5	15	17	185	195
6 ft.	6 ft.	5	3	3	5	55	65
6 ft.	8 ft.	7	3	5	7	75	85
6 ft.	10 ft.	9	3	7	9	95	105
6 ft.	12 ft.	11	3	9	11	115	125
6 ft.	14 ft.	13	3	11	13	135	145

If battery shelves are required see Plates E0958 and E0960.

When ordering housings with buss bar boards, relay mounting boards, etc., order must specify the quantity and location of each board required and if boards are to be drilled, customer must furnish a drilling plan.

Memoranda

PLATE E0960



Battery Shelves and Terminal Boards for Welded Steel Housings

June 1954 GENERAL RAILWAY SIGNAL COMPANY

Battery Shelves and Mounting Boards

For 6 Ft. and 8 Ft. Wide Welded Steel Housings For Sides B and D

NOTE—Side B can be equipped with battery shelves in place of mounting boards as shown by sketch on opposite page.

Battery shelves can be furnished in 5 ft. or 7 ft. lengths for 8 ft. wide housings and 3 ft. or 5 ft. lengths for 6 ft. wide housings as required. A cover board is provided over battery shelves to protect batteries from falling objects.

Solid lines show relative lengths of short shelves to width of housing and dotted extensions show relative length of long shelves to width of housing.

Side B is shown equipped with three battery shelves with cover board, one buss bar board and one relay mounting board.

Wooden buss bar boards, relay mounting boards and battery shelves will be painted gray unless otherwise specified.

The relay capacity of boards is the same as shown on Plate E0959 for Side B.

All boards furnished will be of wood unless otherwise specified; however, when buss bars are required, we will furnish the 4″ board of ebony asbestos with busses as specified, see Plate E0959 for description of buss bars. If buss bars are required, the number of posts required and location must be specified.

When ordering housing with battery shelves, customer must specify the length, location and quantity of each type of shelf and mounting boards.

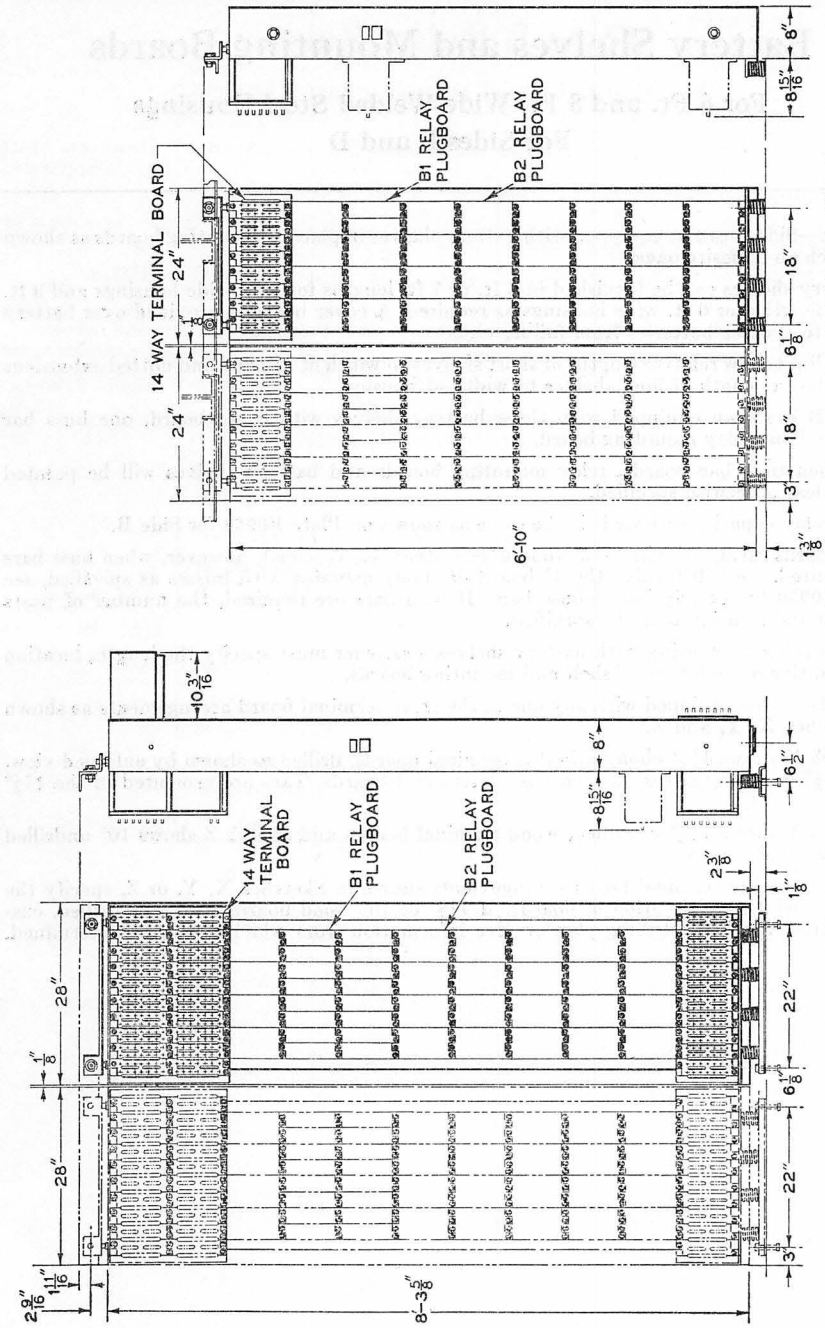
Side D can be equipped with any one of the three terminal board arrangements as shown in Sketches X, Y, and Z.

Sketch X shows 4½″ ebony asbestos terminal boards, drilled as shown by enlarged view, with 1½″ wood tag strips on each side of terminal boards. Tags are cemented to the 1½″ strips.

Sketch Y shows 7½″ undrilled, wood terminal boards and Sketch Z shows 10″ undrilled wood terminal boards.

When ordering terminal board arrangements shown in Sketches X, Y, or Z, specify the quantity, width and location of boards. If 7½″ or 10″ wood boards are to be drilled, customer must furnish a drilling plan or give information from which it can be determined.

PLATE E0960-1



Type B Relay Racks

June 1954 GENERAL RAILWAY SIGNAL COMPANY

Type B Relay Racks

For Welded Steel Housings and Towers

NOTE—The relay racks listed below are recommended as standard. However, other types of relay racks can be furnished if customer will specify quantity and type of apparatus to be mounted or give information from which it can be determined.

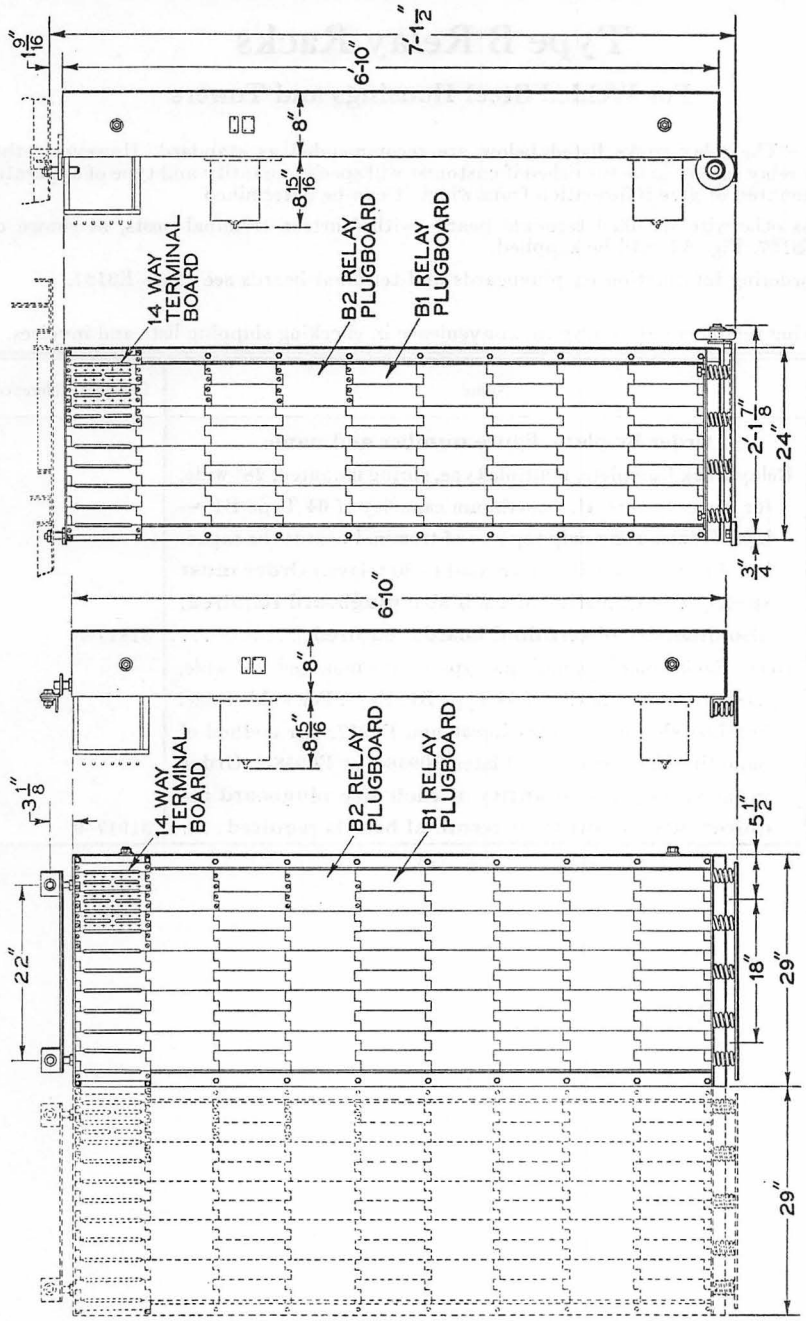
Unless otherwise specified terminal boards with fourteen terminal posts, as shown on Plate E3137, Fig. A1, will be supplied.

For ordering information on plugboards and terminal boards see Plate E3137.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Relay Rack Complete, multiple type, spring mounted, 28″ wide, for use in towers. Has maximum capacity of 64 Type B1 relays. (When using only top row of terminal boards the capacity of relay rack will be increased to 80 relays.) **Order must specify the quantity of each size plugboard required, also quantity of terminal boards required**	31917–8
B	Relay Rack Complete, multiple type, spring mounted, 24″ wide, has maximum capacity of 64 Type B1 relays. For welded steel housings shown on Plates E0956 and E0957. For method of mounting in housings, see Plates E0958-1 or E0958-2. **Order must specify the quantity of each size plugboard required, also quantity of terminal boards required**	31917–9

PLATE E0960-2



Type B Relay Racks

Type B Relay Racks

For Welded Steel Housings

NOTE—The relay racks listed below are recommended as standard. However, other types of relay racks can be furnished if customer will specify quantity and type of apparatus to be mounted or give information from which it can be determined.

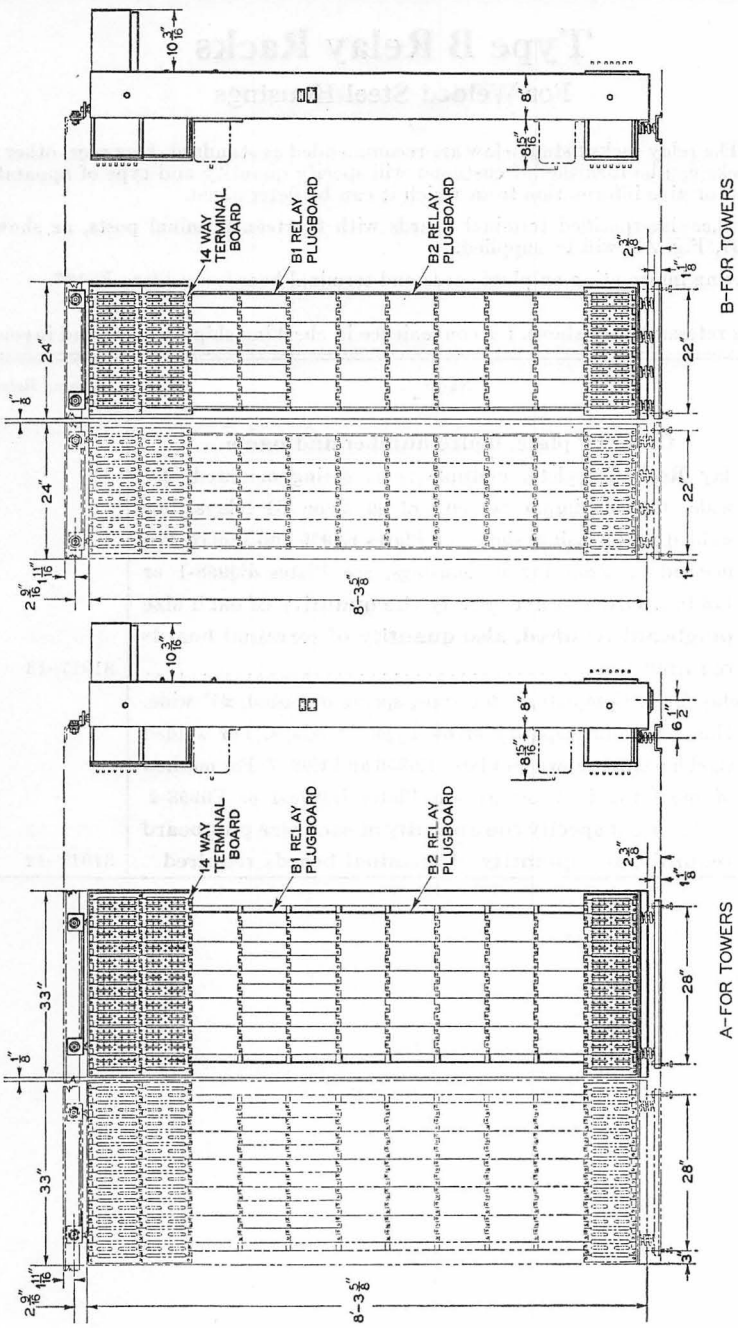
Unless otherwise specified terminal boards with fourteen terminal posts, as shown on Plate E3137, Fig. A1, will be supplied.

For ordering information on plugboards and terminal boards see Plate E3137.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Relay Rack Complete, multiple type, spring mounted, 29″ wide. Has maximum capacity of 80 Type B1 relays. For welded steel housings shown on Plates E0956 and E0957. For method of mounting in housings, see Plates E0958-1 or E0958-2. **Order must specify the quantity of each size plugboard required, also quantity of terminal boards required**	31917–13
B	Relay Rack Complete, swing type, spring mounted, 24″ wide. Has maximum capacity of 64 Type B1 relays. For welded steel housings shown on Plates E0956 and E0957. For method of mounting in housings, see Plates E0958-1 or E0958-2. **Order must specify the quantity of each size plugboard required, also quantity of terminal boards required**	31917–12

PLATE E0960-3



Type B Relay Racks

Type B Relay Racks

For Towers

NOTE—The relay racks listed below are recommended as standard. However, other types of relay racks can be furnished if customer will specify quantity and type of apparatus to be mounted or give information from which it can be determined.

Unless otherwise specified terminal boards with fourteen terminal posts, as shown on Plate E3137, Fig. A1, will be supplied.

For ordering information on plugboards and terminal boards see Plate E3137.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Relay Rack Complete, multiple type, spring mounted, 33″ wide, for use in towers. Has maximum capacity of 80 Type B1 relays. (When using only top row of terminal boards the capacity of relay rack will be increased to 90 relays.) **Order must specify the quantity of each size plugboard required, also quantity of terminal boards required**	31917–14
B	Relay Rack Complete, multiple type, spring mounted, 24″ wide, for use in towers. Has maximum capacity of 64 Type B1 relays. (When using only top row of terminal boards the capacity of relay rack will be increased to 72 relays.) **Order must specify the quantity of each size plugboard required, also quantity of terminal boards required**	31917–16

Memoranda

Welded Steel Cases

Supersedes Plates E0970 to E0990
inclusive dated June 1938

Welded Steel Cases

The Welded Steel Cases shown on the following plates are constructed of a heavy-gauge steel, which is strong, durable and corrosive resistant.

The cases shown on Plates E0970-1 to E0976-1 are equipped with front and rear hinged doors. These cases are also equipped with a removable angle iron at bottom, in rear, to permit if necessary, sliding housing in position after cables are installed in foundation.

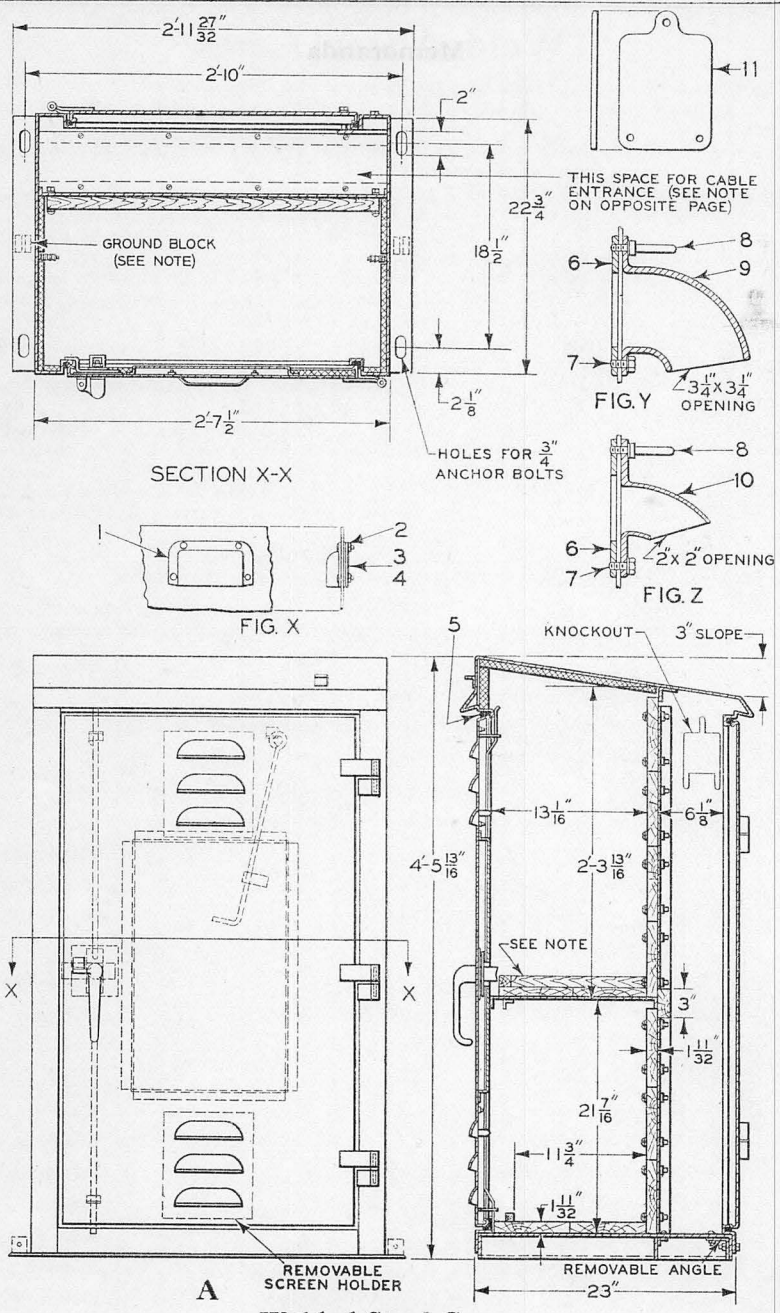
Front doors only are equipped with handle for padlocking. Rear doors may be equipped with handles for padlocking if specified.

The hinges on the doors of all cases are equipped with fast brass pins.

Doors are equipped with torch wicking gaskets, thereby insuring a tight seal between door and case.

Memoranda

PLATE E0970-1



Welded Steel Cases

Welded Steel Cases

NOTE—See general information on page 91 preceding Plate E0970-1.

Cases Complete do not include anchor bolts or padlocks which must be ordered separately if required.

Cases will be painted inside and out with one coat of rust inhibiting primer and finishing coats of gray inside unless otherwise specified.

Wooden back boards will be painted gray unless otherwise specified. These back boards are of pine, however ¾″ thick plywood can be furnished if specified.

Floor boards are painted with a black acid-resisting paint for storage or primary cells. Celotex lining will be supplied unless otherwise specified.

Cases are provided with knockouts on both sides to which cable entrance couplings can be attached in the field. See Figs. Y and Z on opposite page for method of assembling. Specify size and quantity of couplings Figs. 9 or 10 required.

Cases are equipped with one clip for door hook, which provides for holding door open at 160 degrees.

Cases will be furnished with louvre type ventilators as shown, however removable type ventilators as shown by Fig. X can be furnished if specified.

If ground blocks are required order must specify type required and size of channel pin to be used. There are two types of blocks available, one with a single hole for channel pin or one with two holes at right angles.

The space at bottom for cable entrance may be open or may be closed with a removable steel plate, wooden or transite board or a steel plate can be furnished with four 3 9/16″ dia. knockouts. Order must specify arrangement desired.

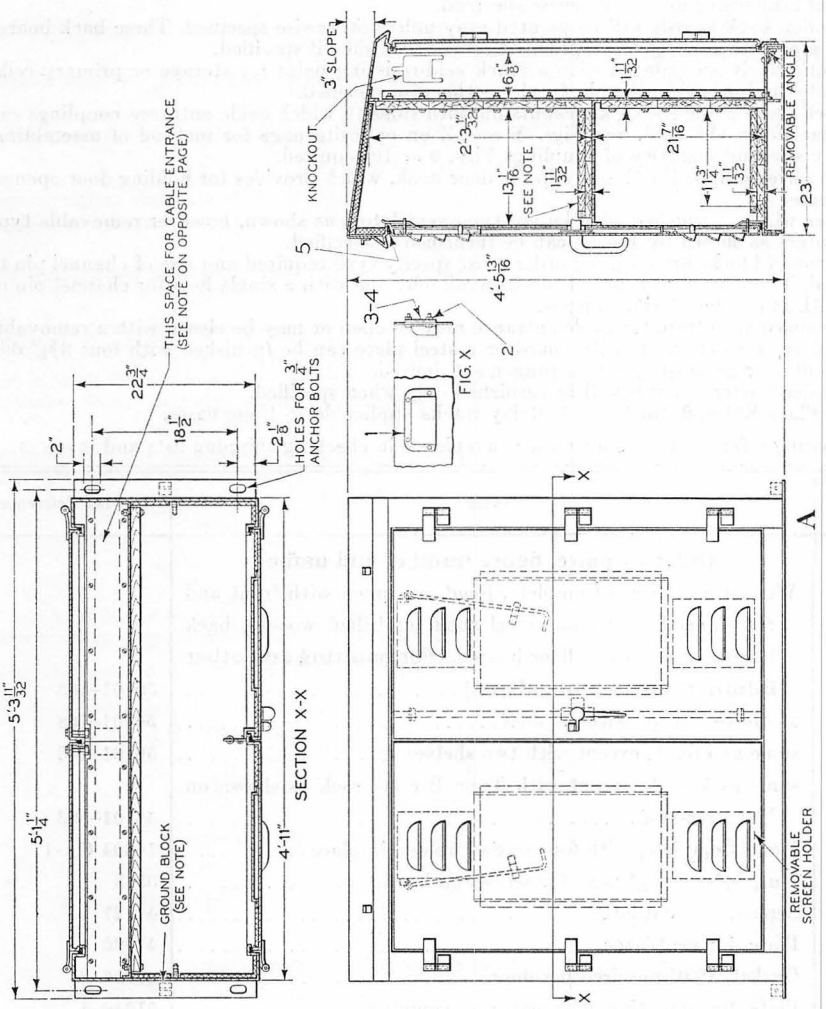
Wooden battery boards will be furnished only when specified.

See Plate E0980-2, for Type B Relay Racks applicable to these cases.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Welded Steel Case Complete, lined, equipped with front and rear hinged doors, one steel shelf, undrilled wooden back boards, and wooden floor boards. **(For painting and other information see note above.)**	56101–103
A1	as above, except without shelf	56101–103
A2	same as Fig. A, except with two shelves	56101–103
A3	same as Fig. A, except with Type B relay rack as shown on Plate E0980-2	56101–103
1	Hood Complete, with four screws welded in place	14604 Gr. 1
2	Nut, ¼″-20 x 7/32″ hex., for screws on hood	0383
3	Screen, for ventilator	47527
4	Plate, for ventilator	47526
5	Gasket, 12′0″ required per door	43786–2
6	Plate, for mounting cable entrance couplings	51342–4
7	Screw, 5/16″-18 x ⅝″ hex. hd., with lock washer, for couplings	0441–5 0623–3
8	Eyebolt, 5/16″-18, for couplings	38508–5
9	Coupling, 3¼″ x 3¼″ opening, for cable entrance	45689–150
10	Coupling, 2″ x 2″ opening, for cable entrance	45689–91
11	Plate, to cover knockout cable entrance	51342–2

PLATE E0971-1



Welded Steel Cases

Welded Steel Cases

NOTE—See general information on page 91 preceding Plate E0970-1.

Cases Complete do not include anchor bolts or padlocks which must be ordered separately if required.

Cases will be painted inside and out with one coat of rust inhibiting primer and finishing coats of gray inside unless otherwise specified.

Wooden back boards will be painted gray unless otherwise specified. These back boards are of pine, however ¾" thick plywood can be furnished if specified.

Floor boards are painted with a black acid-resisting paint for storage or primary cells.

Celotex lining will be supplied unless otherwise specified.

Cases are provided with knockouts on both sides to which cable entrance couplings can be attached in the field. See Figs. Y and Z on Plate E0970-1 for method of assembling. Specify size and quantity of couplings required.

Cases are equipped with one clip for each door hook, which provides for holding the doors open at 160 degrees.

Cases will be furnished with louvre type ventilators as shown, however removable type ventilators as shown by Fig. X can be furnished if specified.

If ground blocks are required order must specify type required and size of channel pin to be used. There are two types of blocks available, one with a single hole for channel pin or one with two holes at right angles.

The space at bottom for cable entrance may be open or may be closed with a removable steel plate, wooden or transite board or a steel plate can be furnished with eight 3⅝" dia. knockouts. Order must specify arrangement desired.

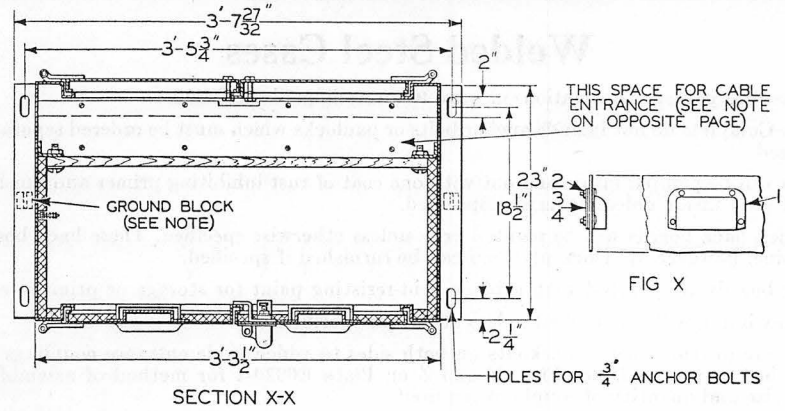
Wooden battery boards will be furnished only when specified.

See Plate E0980-2, for Type B Relay racks applicable to these cases.

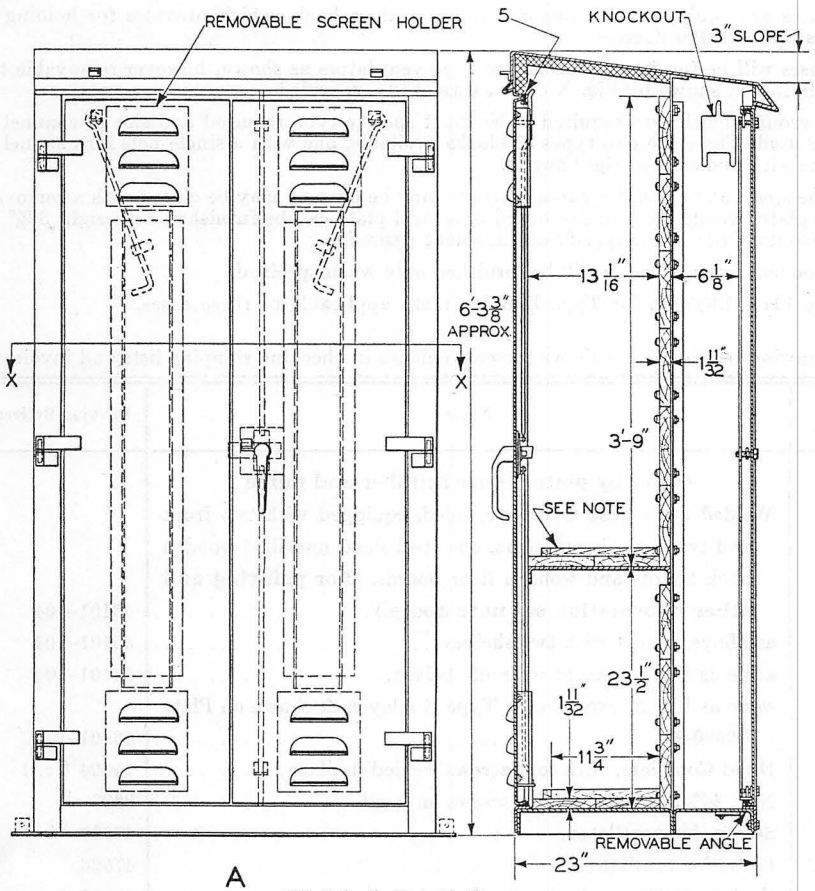
Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Welded Steel Case Complete, lined, equipped with two front and two rear hinged doors, one steel shelf, undrilled wooden back boards and wooden floor boards. **(For painting and other information see note above.)**	56101–104
A1	as above, except with two shelves	56101–104
A2	same as Fig. A, except without shelves	56101–104
A3	same as Fig. A, except with Type B relay rack shown on Plate E0980-2	56101–104
1	Hood Complete, with four screws welded in place	14604 Gr. 1
2	Nut, ¼"-20 x 7/32" hex., for screws on hood	0383
3	Screen, for ventilator	47527
4	Plate, for ventilator	47526
5	Gasket, 20'-6" required per pair of doors	43786-2

PLATE E0971-2



SECTION X-X



A

Welded Steel Cases

Welded Steel Cases

NOTE—See general information on page 91 preceding Plate E0970-1.

Cases Complete do not include anchor bolts or padlocks which must be ordered separately if required.

Cases will be painted inside and out with one coat of rust inhibiting primer and finishing coats of gray inside unless otherwise specified.

Wooden back boards will be painted gray unless otherwise specified. These back boards are of pine, however $\frac{3}{4}$" thick plywood can be furnished if specified.

Floor boards are painted with a black acid-resisting paint for storage or primary cells.

Celotex lining will be supplied unless otherwise specified.

Cases are provided with knockouts on both sides to which cable entrance couplings can be attached in the field. See Figs. Y and Z on Plate E0970-1 for method of assembling. Specify size and quantity of couplings required.

Cases are equipped with one clip for each door hook, which provides for holding the doors open at 160 degrees.

Cases will be furnished with louvre type ventilators as shown, however removable type ventilators as shown by Fig. X can be furnished if specified.

If ground blocks are required order must specify type required and size of channel pin to be used. There are two types of blocks available, one with a single hole for channel pin or one with two holes at right angles.

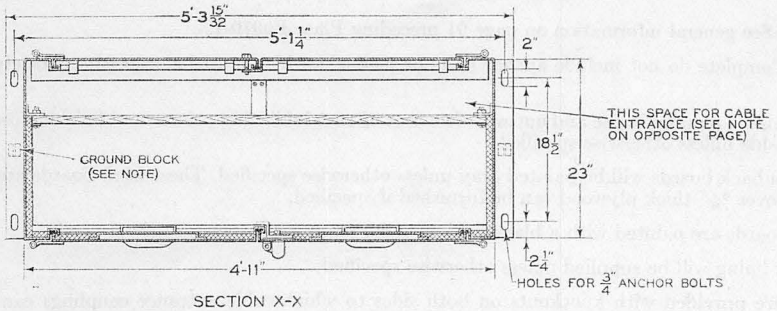
The space at bottom for cable entrance may be open or may be closed with a removable steel plate, wooden or transite board or a steel plate can be furnished with six $3\frac{9}{16}$" dia. knockouts. Order must specify arrangement desired.

Wooden battery boards will be furnished only when specified.

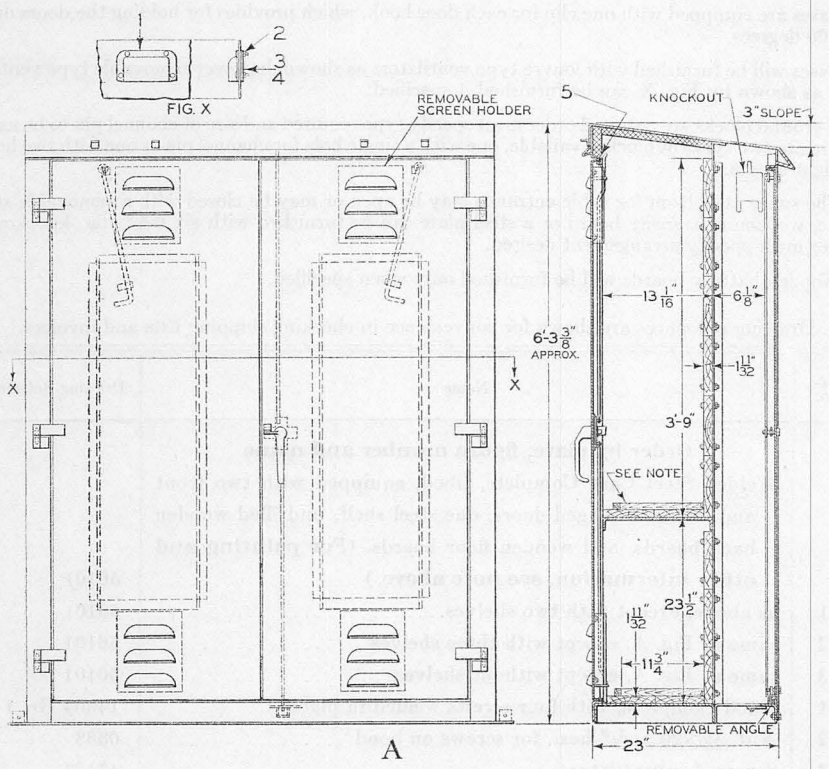
Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Welded Steel Case Complete, lined, equipped with two front and two rear hinged doors, one steel shelf, undrilled wooden back boards, and wooden floor boards. **(For painting and other information, see note above.)**	56101
A1	as above, except with two shelves	56101
A2	same as Fig. A, except with three shelves	56101
A3	same as Fig. A, except without shelves	56101
1	Hood Complete, with four screws welded in place	14604 Gr. 1
2	Nut, $\frac{1}{4}$"-20 x $\frac{7}{32}$" hex., for screws on hood	0383
3	Screen, for ventilator	47527
4	Plate, for ventilator	47526
5	Gasket, 23'-0" required per pair of doors	43786–2

PLATE E0972-1



SECTION X-X



A

Welded Steel Cases

Welded Steel Cases

NOTE—See general information on page 91 preceding Plate E0970-1.

Cases Complete do not include anchor bolts or padlocks which must be ordered separately if required.

Cases will be painted inside and out with one coat of rust inhibiting primer and finishing coats of gray inside unless otherwise specified.

Wooden back boards will be painted gray unless otherwise specified. These back boards are of pine, however ¾″ thick plywood can be furnished if specified.

Floor boards are painted with a black acid-resisting paint for storage or primary cells.

Celotex lining will be supplied unless otherwise specified.

Cases are provided with knockouts on both sides to which cable entrance couplings can be attached in the field. See Figs. Y and Z on Plate E0970-1 for method of assembling. Specify size and quantity of couplings required.

Cases are equipped with two clips for each door hook, which provide for holding the doors open at 90 or 160 degrees.

Cases will be furnished with louvre type ventilators as shown, however removable type ventilators as shown by Fig. X can be furnished if specified.

If ground blocks are required order must specify type required and size of channel pin to be used. There are two types of blocks available, one with a single hole for channel pin or one with two holes at right angles.

The space at bottom for cable entrance may be open or may be closed with a removable steel plate, wooden or transite board or a steel plate can be furnished with eight $3\frac{5}{16}$″ dia. knockouts. Order must specify arrangement desired.

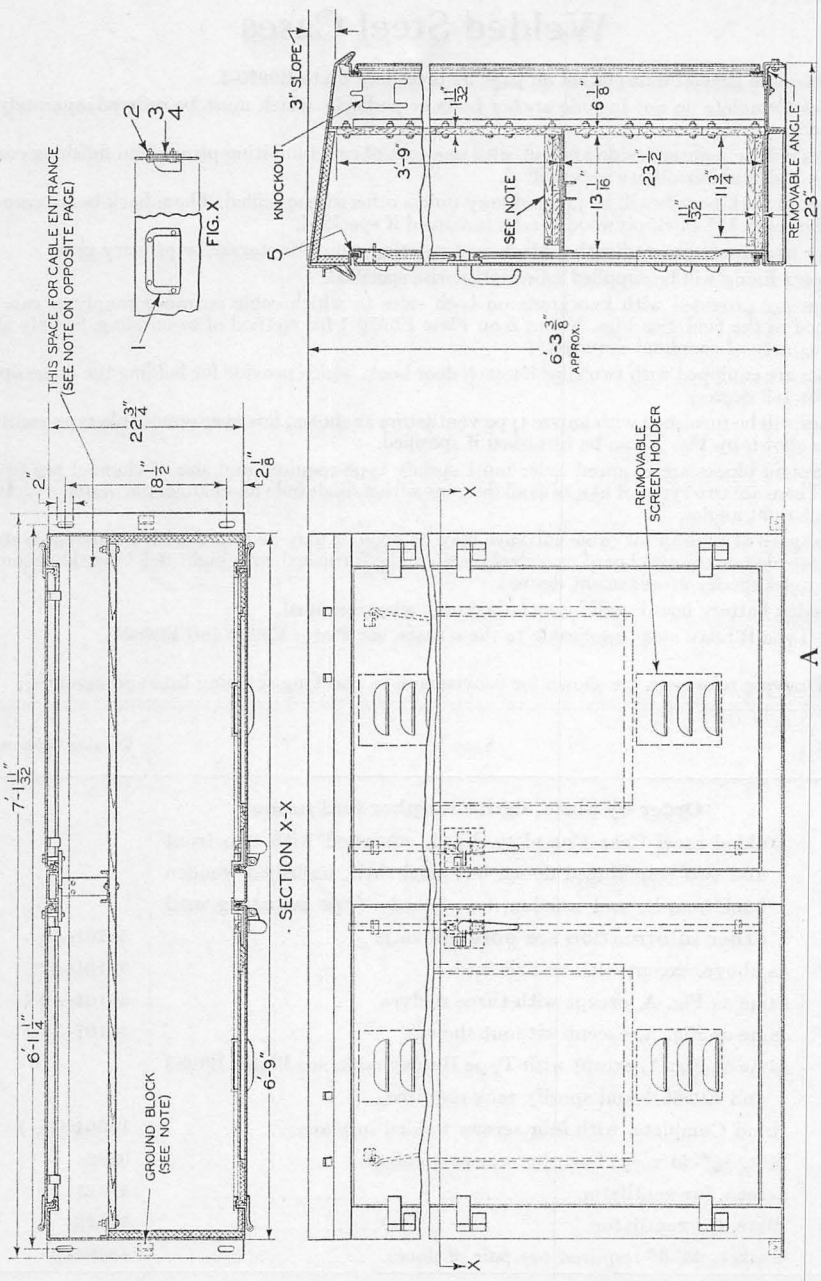
Wooden battery boards will be furnished only when specified.

For Type B relay racks applicable to these cases, see Plates E0980 and E0980-1.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Welded Steel Case Complete, lined, equipped with two front and two rear hinged doors, one steel shelf, undrilled wooden back boards, and wooden floor boards. **(For painting and other information see note above.)**	56101–42
A1	as above, except with two shelves	56101–42
A2	same as Fig. A, except with three shelves	56101–42
A3	same as Fig. A, except without shelves	56101–42
A4	same as Fig. A, except with Type B relay rack, see Plates E0980 and E0980-1 and specify rack required.	
1	Hood Complete, with four screws welded in place	14604 Gr. 1
2	Nut, ¼″-20 x $\frac{7}{32}$″ hex., for screws on hood	0383
3	Screen, for ventilator	47527
4	Plate, for ventilator	47526
5	Gasket, 25′-6″ required per pair of doors	43786–2

PLATE E0974-1



A

Welded Steel Cases

Welded Steel Cases

NOTE—See general information on page 91 preceding Plate E0970-1.

Cases Complete do not include anchor bolts or padlocks which must be ordered separately if required.

Cases will be painted inside and out with one coat of rust inhibiting primer and finishing coats of gray inside unless otherwise specified.

Wooden back boards will be painted gray unless otherwise specified. These back boards are of pine, however ¾″ thick plywood can be furnished if specified.

Floor boards are painted with a black acid-resisting paint for storage or primary cells.

Celotex lining will be supplied unless otherwise specified.

Cases are provided with knockouts on both sides to which cable entrance couplings can be attached in the field. See Figs. Y and Z on Plate E0970-1 for method of assembling. Specify size and quantity of couplings required.

Cases are equipped with two clips for each door hook, which provide for holding the doors open at 90 or 160 degrees.

Cases will be furnished with louvre type ventilators as shown, however removable type ventilators as shown by Fig. X can be furnished if specified.

If ground blocks are required order must specify type required and size of channel pin to be used. There are two types of blocks available, one with a single hole for channel pin or one with two holes at right angles.

The space at bottom for cable entrance may be open or may be closed with a removable steel plate, wooden or transite board or a steel plate can be furnished with twelve $3\frac{9}{16}$″ dia. knockouts. Order must specify arrangement desired.

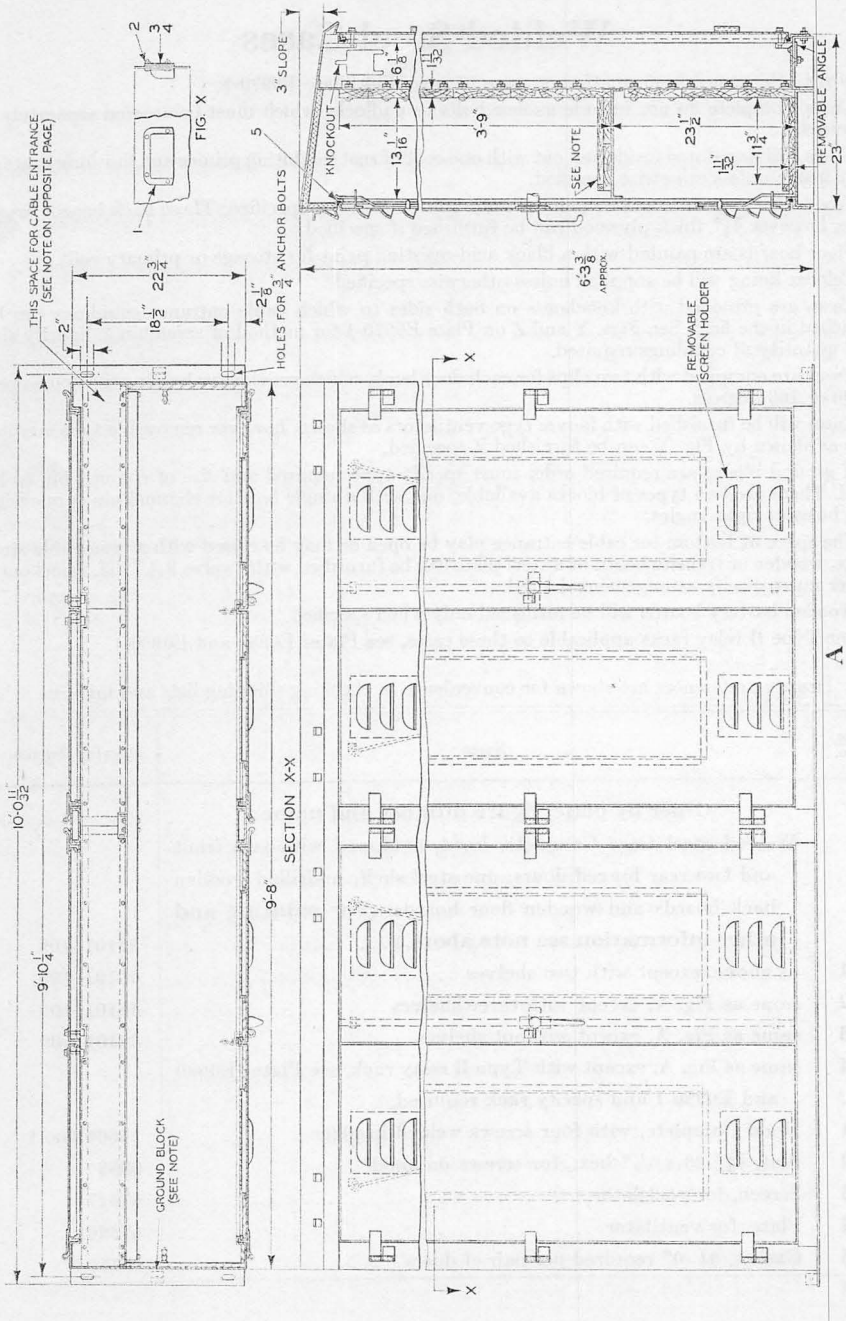
Wooden battery boards will be furnished only when specified.

For Type B relay racks applicable to these cases, see Plates E0980 and E0980-1.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Welded Steel Case Complete, lined, equipped with two front and two rear hinged doors; one steel shelf, undrilled wooden back boards and wooden floor boards. **(For painting and other information see note above.)**	56101–109
A1	as above, except with two shelves	56101–109
A2	same as Fig. A, except with three shelves	56101–109
A3	same as Fig. A, except without shelves	56101–109
A4	same as Fig. A, except with Type B relay rack, see Plates E0980 and E0980-1 and specify rack required.	
1	Hood Complete, with four screws welded in place	14604 Gr. 1
2	Nut, ¼″-20 x $\frac{7}{32}$″ hex., for screws on hood	0383
3	Screen, for ventilator	47527
4	Plate, for ventilator	47526
5	Gasket, 34′-0″ required per pair of doors	43786–2

PLATE E0976-1



A
Welded Steel Cases

Welded Steel Cases

NOTE—See general information on page 91 preceding Plate E0970-1.

Cases Complete do not include anchor bolts or padlocks which must be ordered separately if required.

Cases will be painted inside and out with one coat of rust inhibiting primer and finishing coats of gray inside unless otherwise specified.

Wooden back boards will be painted gray unless otherwise specified. These back boards are of pine, however ¾" thick plywood can be furnished if specified.

Floor boards are painted with a black acid-resisting paint for storage or primary cells.

Celotex lining will be supplied unless otherwise specified.

Cases are provided with knockouts on both sides to which cable entrance couplings can be attached in the field. See Figs. Y and Z on Plate E0970-1 for method of assembling. Specify size and quantity of couplings required.

Cases are equipped with two clips for each door hook, which provide for holding the doors open at 90 or 160 degrees.

Cases will be furnished with louvre type ventilators as shown, however removable type ventilators as shown by Fig. X can be furnished if specified.

If ground blocks are required order must specify type required and size of channel pin to be used. There are two types of blocks available, one with a single hole for channel pin or one with two holes at right angles.

The space at bottom for cable entrance may be open or may be closed with a removable steel plate, wooden or transite board or a steel plate can be furnished with sixteen 3 9/16" dia. knockouts. Order must specify arrangement desired.

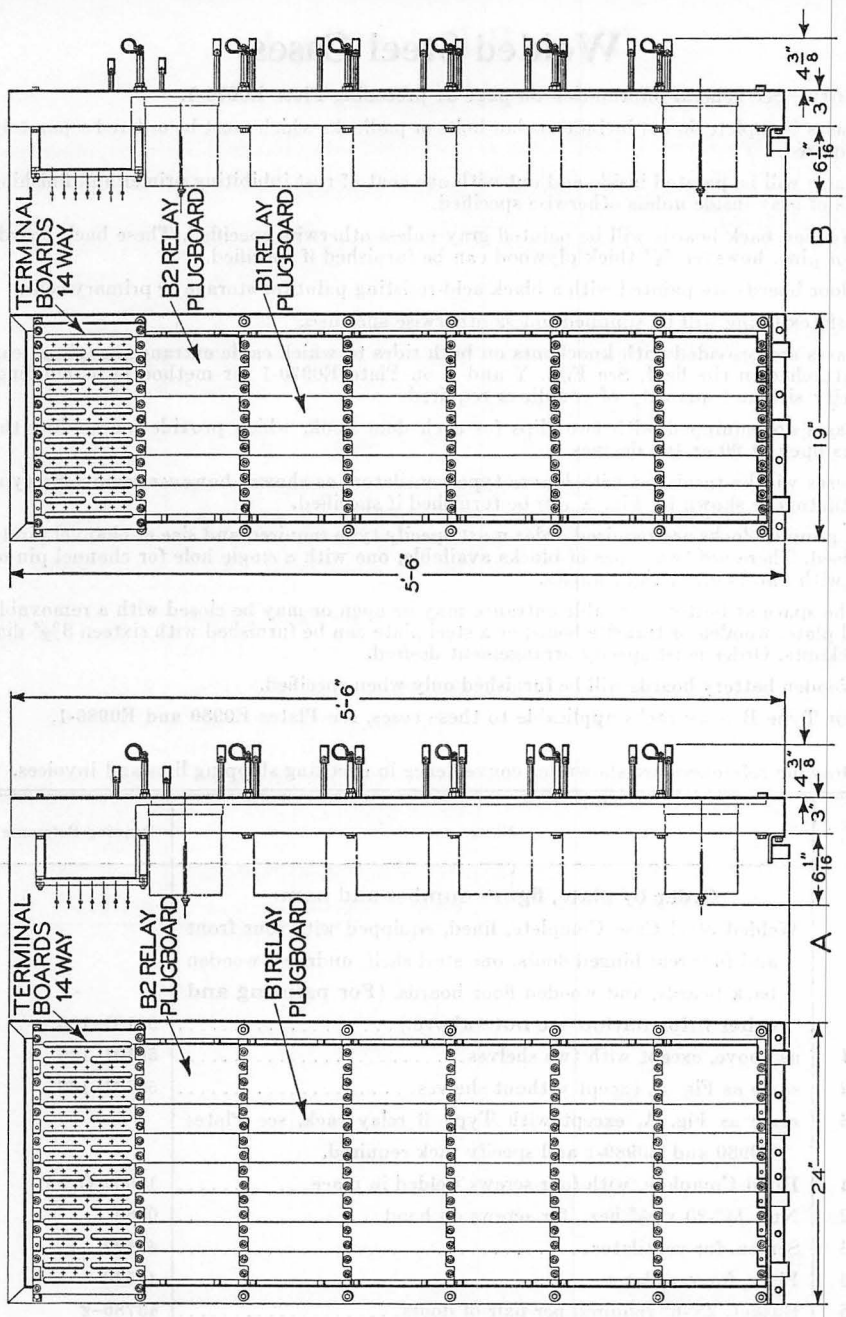
Wooden battery boards will be furnished only when specified.

For Type B relay racks applicable to these cases, see Plates E0980 and E0980-1.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Welded Steel Case Complete, lined, equipped with four front and four rear hinged doors, one steel shelf, undrilled wooden back boards, and wooden floor boards. **(For painting and other information see note above.)**	56101–106
A1	as above, except with two shelves	56101–106
A2	same as Fig. A, except without shelves	56101–106
A3	same as Fig. A, except with Type B relay rack, see Plates E0980 and E0980-1 and specify rack required.	
1	Hood Complete, with four screws welded in place	14604 Gr. 1
2	Nut, ¼"-20 x 7/32" hex., for screws on hood	0383
3	Screen, for ventilator	47527
4	Plate, for ventilator	47526
5	Gasket, 25'-6" required per pair of doors	43786–2

PLATE E0980



Type B Relay Racks

June 1954 GENERAL RAILWAY SIGNAL COMPANY

Type B Relay Racks

For Welded Steel Cases

NOTE—The relay racks listed below are recommended as standard. However, other types of relay racks can be furnished if customer will specify quantity and type of apparatus to be mounted or give information from which it can be determined.

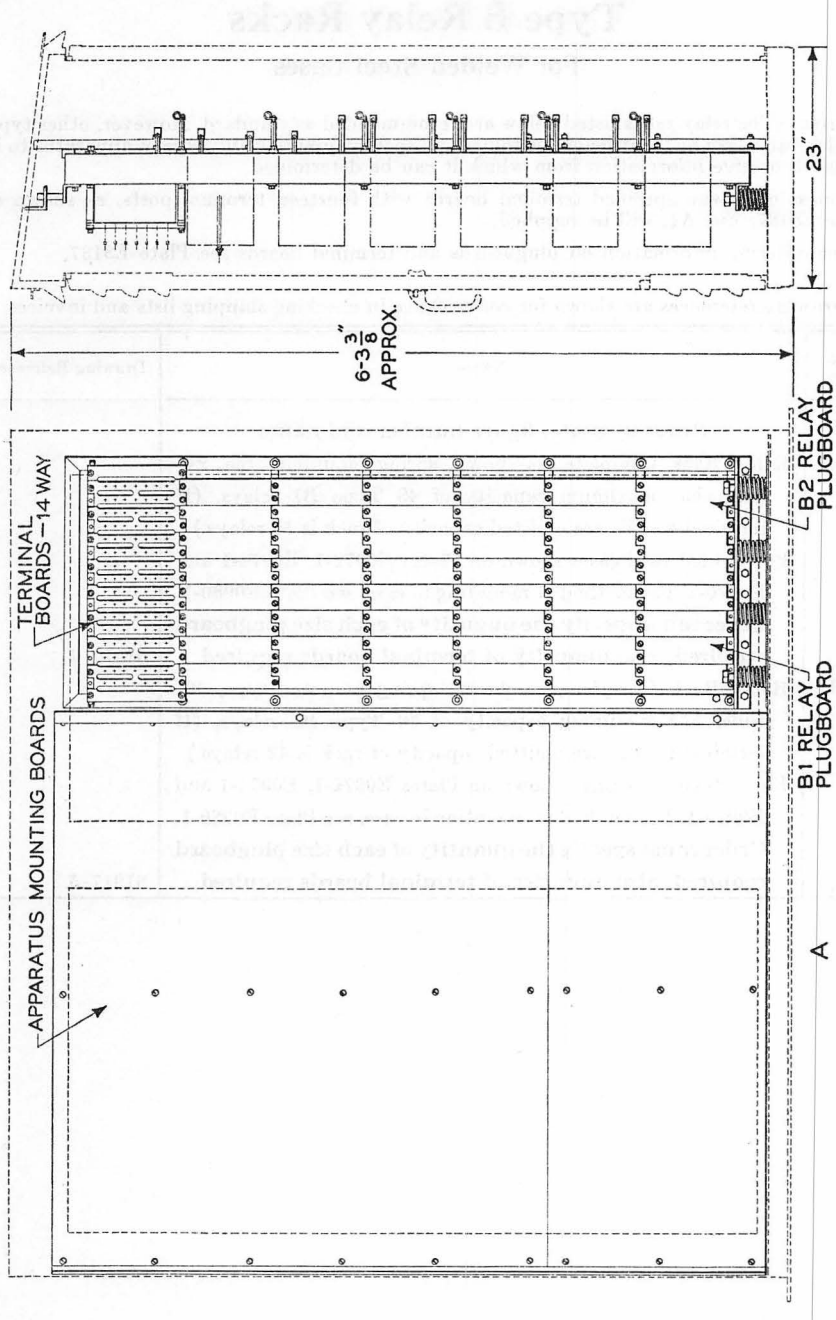
Unless otherwise specified terminal boards with fourteen terminal posts, as shown on Plate E3137, Fig. A1, will be supplied.

For ordering information on plugboards and terminal boards see Plate E3137.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Relay Rack Complete, as shown, spring mounted type, 24″ wide, has maximum capacity of 48 Type B1 relays. (If terminal boards are omitted capacity of rack is 56 relays.) For welded steel cases shown on Plates E0972-1, E0974-1 and E0976-1. For method of mounting in case, see Plate E0980-1. **Order must specify the quantity of each size plugboard required, also quantity of terminal boards required . . .**	31917–4
B	Relay Rack Complete, as shown, spring mounted type, 19″ wide, has maximum capacity of 36 Type B1 relays. (If terminal boards are omitted capacity of rack is 42 relays.) For welded steel cases shown on Plates E0972-1, E0974-1 and E0976-1. For method of mounting in case, see Plate E0980-1. **Order must specify the quantity of each size plugboard required, also quantity of terminal boards required . . .**	31917–5

PLATE E0980-1



Type B Relay Racks

June 1954 GENERAL RAILWAY SIGNAL COMPANY

Type B Relay Racks

For Welded Steel Cases

NOTE—The relay racks listed below are recommended as standard. However, other types of relay racks can be furnished if customer will specify quantity and type of apparatus to be mounted or give information from which it can be determined.

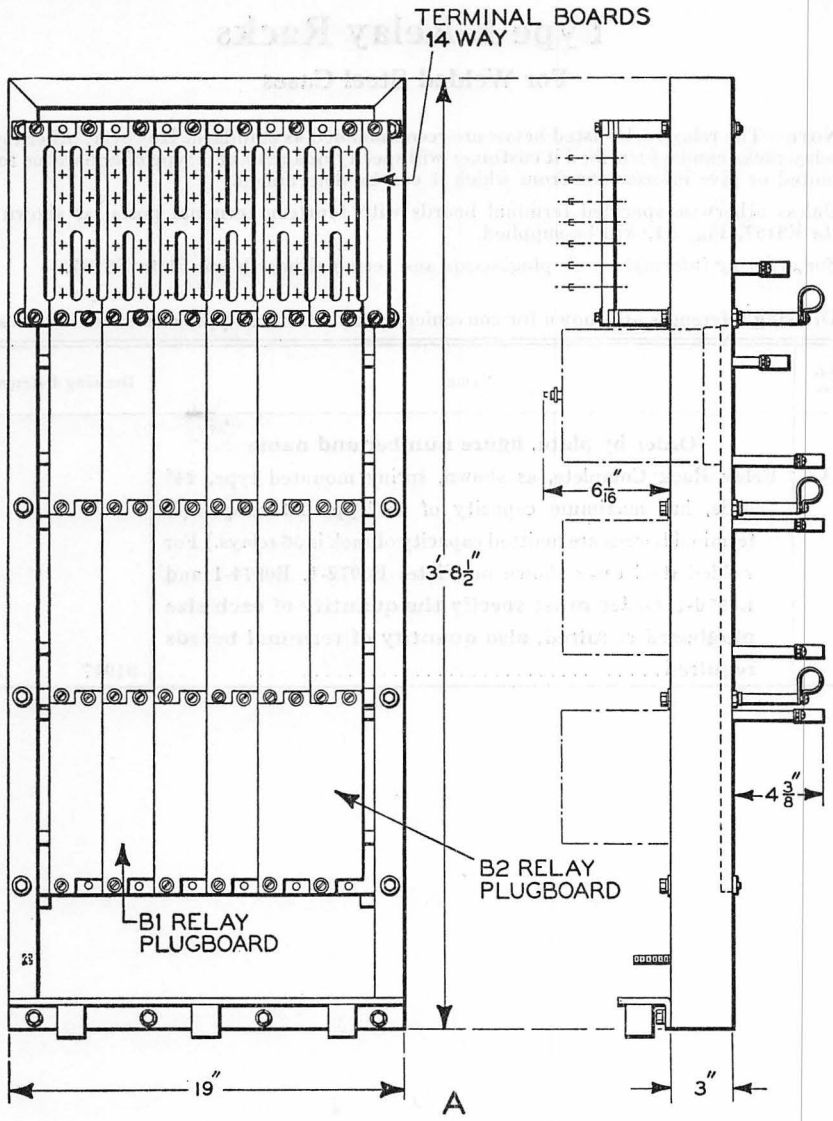
Unless otherwise specified terminal boards with fourteen terminal posts, as shown on Plate E3137, Fig. A1, will be supplied.

For ordering information on plugboards and terminal boards see Plate E3137.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Relay Rack Complete, as shown, spring mounted type, 24″ wide, has maximum capacity of 48 Type B1 relays. (If terminal boards are omitted capacity of rack is 56 relays.) For welded steel cases shown on Plates E0972-1, E0974-1 and E0976-1. **Order must specify the quantity of each size plugboard required, also quantity of terminal boards required**	31917

PLATE E0980-2



Type B Relay Racks

June 1954 GENERAL RAILWAY SIGNAL COMPANY

Type B Relay Rack

For Welded Steel Cases

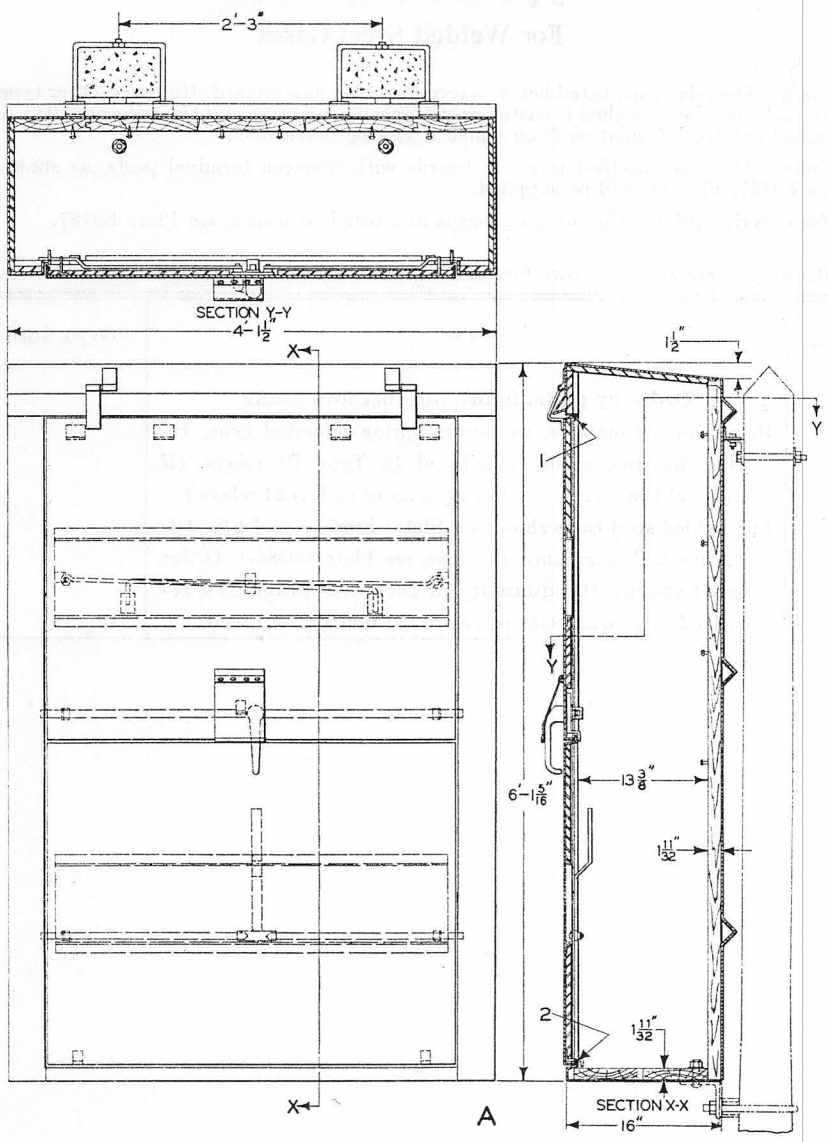
NOTE—The relay rack listed below is recommended as standard. However, other types of relay racks can be furnished if customer will specify quantity and type of apparatus to be mounted or give information from which it can be determined.

Unless otherwise specified terminal boards with fourteen terminal posts, as shown on Plate E3137, Fig. A1, will be supplied.

For ordering information on plugboards and terminal boards see Plate E3137.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Relay Rack Complete, as shown, spring mounted type, 19″ wide, has maximum capacity of 18 Type B1 relays. (If terminal boards are omitted capacity of rack is 24 relays.) For welded steel cases shown on Plates E0970-1 and E0971-1. For method of mounting in case, see Plate E0980-1. **Order must specify the quantity of each size plugboard required, also quantity of terminal boards required**	31917–7



Welded Steel Cases—12 Way

Welded Steel Cases

12 Way

NOTE—See general information on page 91 preceding Plate E0970-1.

Cases Complete do not include anchor bolts or padlocks which must be ordered separately if required.

Cases will be painted inside and out with one coat of rust inhibiting primer and finishing coats of gray inside unless otherwise specified.

Wooden floor boards and back boards will be painted gray unless otherwise specified.

Celotex lining will be supplied unless otherwise specified.

There are no base openings provided, it being left to the railroad company to drill holes to suit local conditions.

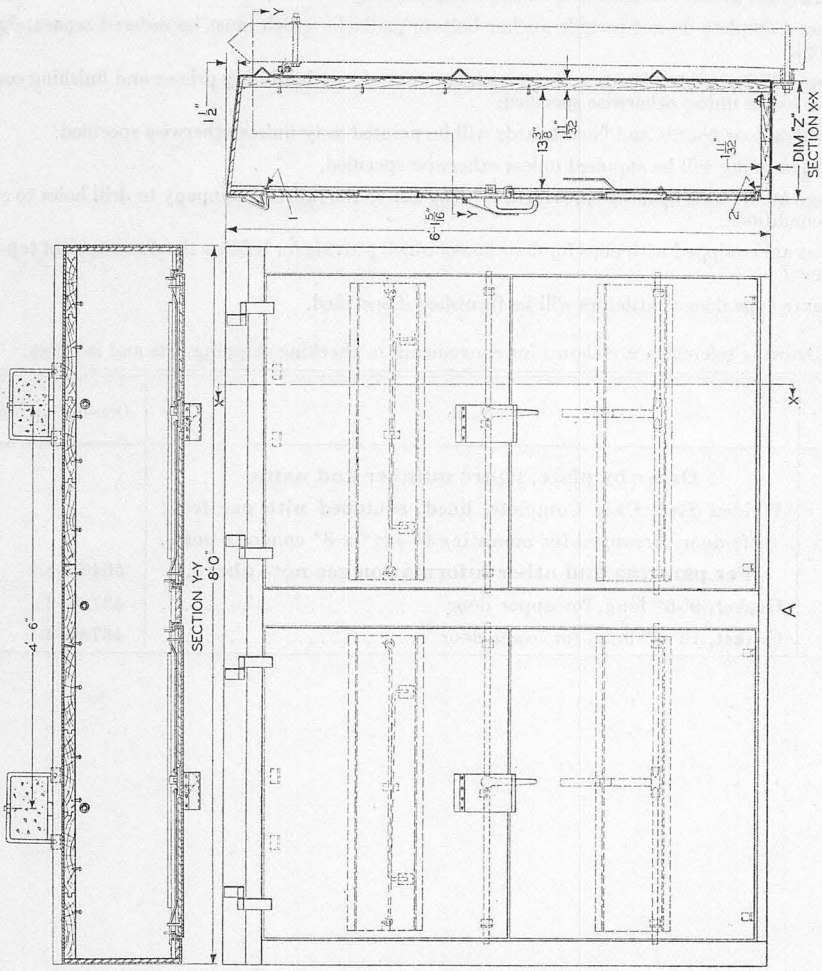
Cases are equipped with clips for door hooks which provide for holding the doors open at top-of-case level.

Louvre type door ventilators will be furnished if specified.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Welded Steel Case Complete, lined, equipped with one front lift door. Arranged for mounting to 4¾″ x 8″ concrete posts. **(For painting and other information see note above.)** .	56495–1
1	Gasket, 9′-3″ long, for upper door	43786–2
2	Gasket, 12′-9″ long, for lower door	43786–2

PLATE E0982



Welded Steel Cases—24 Way

March 1949 GENERAL RAILWAY SIGNAL COMPANY

Welded Steel Cases

24 Way

NOTE—See general information on page 91 preceding Plate E0970-1.

Cases Complete do not include anchor bolts or padlocks which must be ordered separately if required.

Cases will be painted inside and out with one coat of rust inhibiting primer and finishing coats of gray inside unless otherwise specified.

Wooden floor boards and back boards will be painted gray unless otherwise specified.

Celotex lining will be supplied unless otherwise specified.

There are no base openings provided, it being left to the railroad company to drill holes to suit local conditions.

Cases are equipped with clips for door hooks which provide for holding the doors open at top-of-case level.

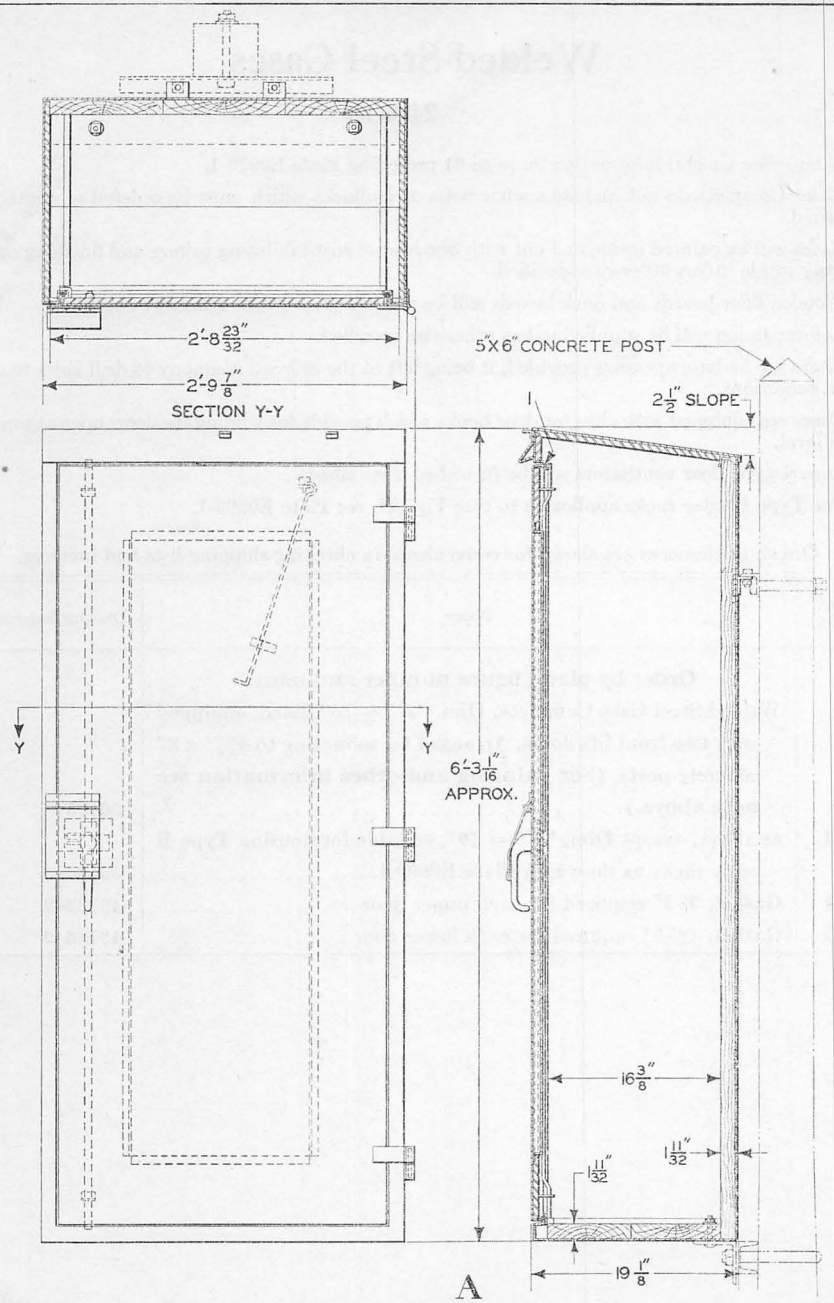
Louvre type door ventilators will be furnished if specified.

For Type B relay racks applicable to case Fig. A1, see Plate E0990-1.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Welded Steel Case Complete, Dim. "Z" = 16", lined, equipped with two front lift doors. Arranged for mounting to 4¾" x 8" concrete posts. **(For painting and other information see note above.)**	56495
A1	as above, except Dim. "Z" = 19", suitable for housing Type B relay racks as shown on Plate E0990-1	56495–6
1	Gasket, 9'-3" required for each upper door	43786–2
2	Gasket, 12'-9" required for each lower door	43786–2

PLATE E0982-1



A

Welded Steel Cases

Welded Steel Cases

NOTE—See general information on page 91 preceding Plate E0970-1.

Cases Complete do not include padlocks which must be ordered separately if required.

Cases will be painted inside and out with one coat of rust inhibiting primer and finishing coats of gray inside unless otherwise specified.

Cases may be furnished for mounting on steel poles, same as shown on Plate E0988, and E0990 if specified.

Cases are equipped with two clips for door hook, which provide for holding the door open at 90 or 160 degrees.

Door ventilators similar to those shown on Plate E0988 will be furnished if specified.

There are no base openings provided, it being left to the railroad company to drill holes to suit local conditions (knockouts for openings may be provided in bottom or back if specified).

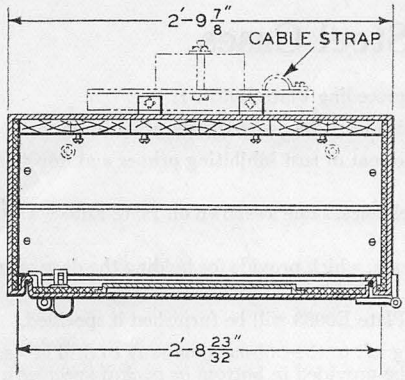
If cable entrances shown on Plate E0999 are required, order must so specify, so that case will be provided with proper opening in bottom.

For Type B relay racks applicable to these cases, see Plate E0990-1.

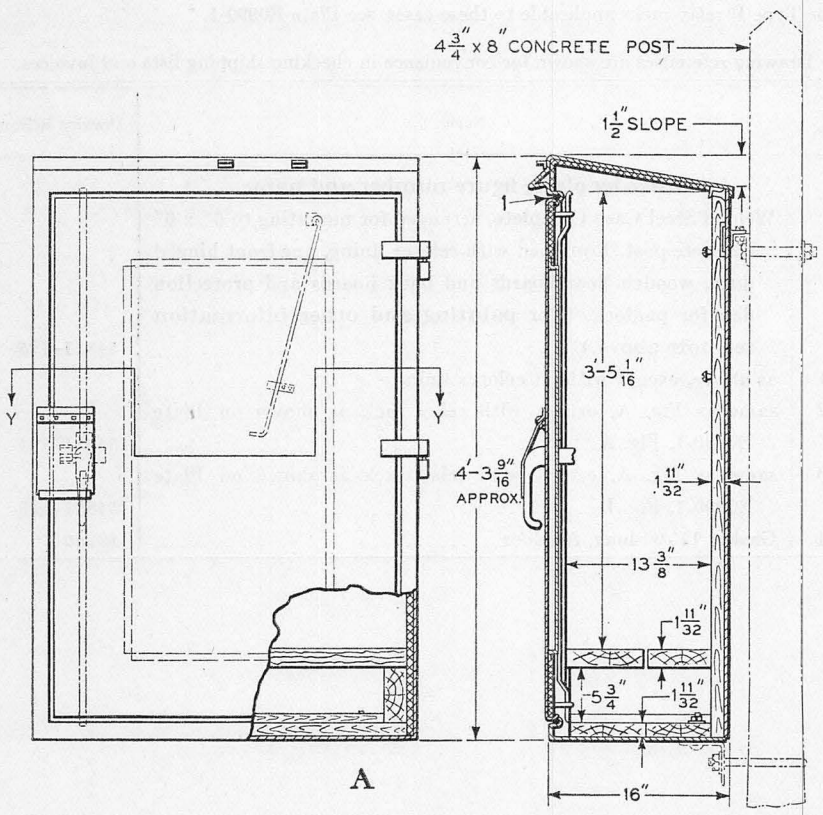
Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Welded Steel Case Complete, arranged for mounting to 5″ x 6″ concrete post. Equipped with celotex lining, one front hinged door, wooden floor boards and back boards and protection flap for padlock. **(For painting and other information see note above.)**	54311–125
A1	as above, except without celotex lining.	
A2	same as Fig. A, except with relay rack as shown on Plate E0990-1, Fig. A	54311–124
A3	same as Fig. A, except with relay rack as shown on Plate E0990-1, Fig. B	54311–126
1	Gasket 17′-0″ long, for door	43786-2

PLATE E0984



SECTION Y–Y



A

Welded Steel Cases

Welded Steel Cases

NOTE—See general information on page 91 preceding Plate E0970-1.

Cases Complete do not include padlocks which must be ordered separately if required.

Cases will be painted inside and out with one coat of rust inhibiting primer and finishing coats of gray inside unless otherwise specified.

Cases may be furnished for mounting on steel poles, same as shown on Plates E0988 and E0990 if specified.

Cases are equipped with two clips for door hook, which provide for holding the door open at 90 or 160 degrees.

Door ventilators similar to those shown on Plate E0988 will be furnished if specified.

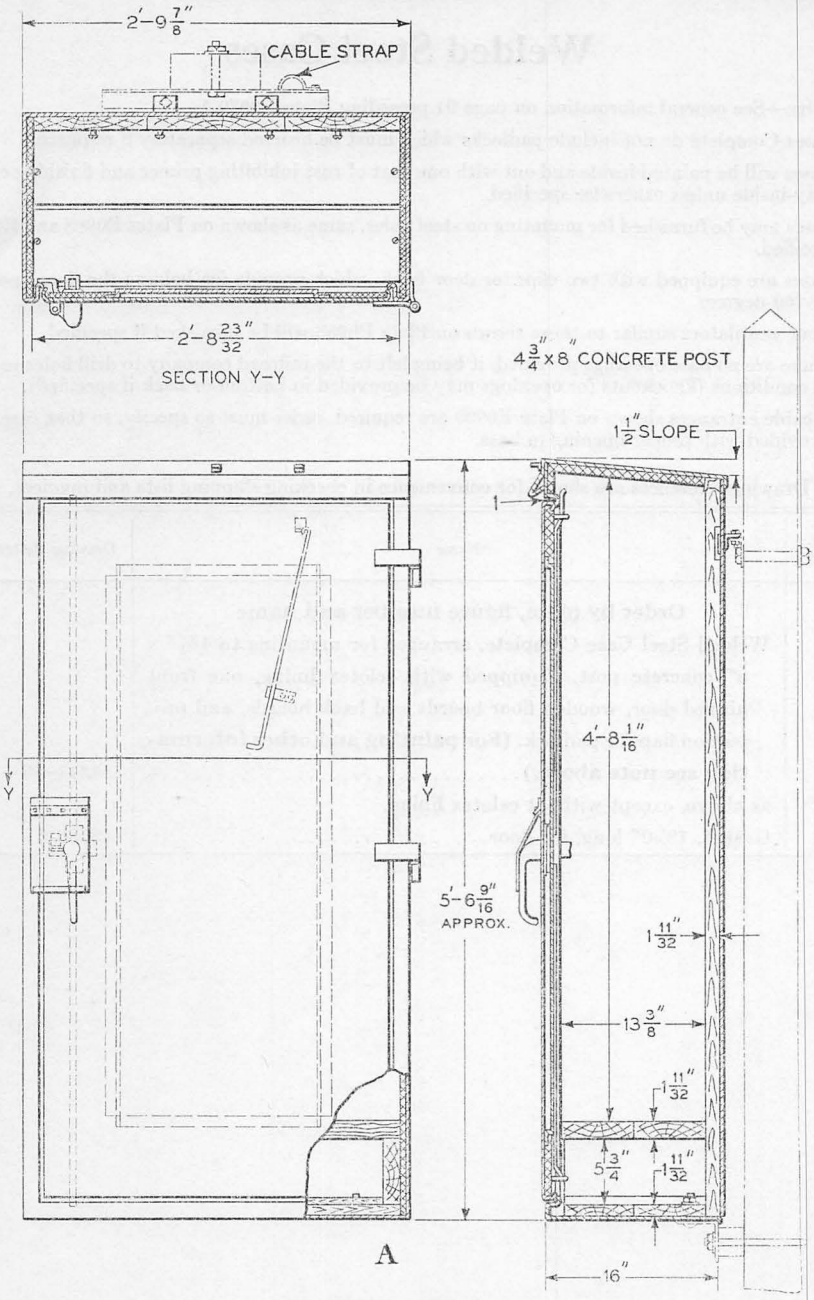
There are no base openings provided, it being left to the railroad company to drill holes to suit local conditions (knockouts for openings may be provided in bottom or back if specified).

If cable entrances shown on Plate E0999 are required, order must so specify, so that case will be provided with proper opening in base.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Welded Steel Case Complete, arranged for mounting to 4¾″ x 8″ concrete post. Equipped with celotex lining, one front hinged door, wooden floor boards and back boards, and protection flap for padlock. **(For painting and other information see note above.)**	54311–56
A1	as above, except without celotex lining.	
1	Gasket, 13′-0″ long, for door	43786-2

PLATE E0986



A

Welded Steel Cases

March 1949 GENERAL RAILWAY SIGNAL COMPANY

Welded Steel Cases

NOTE—See general information on page 91 preceding Plate E0970-1.

Cases Complete do not include padlocks which must be ordered separately if required.

Cases will be painted inside and out with one coat of rust inhibiting primer and finishing coats of gray inside unless otherwise specified.

Cases may be furnished for mounting on steel poles, same as shown on Plates E0988 and E0990 if specified.

Cases are equipped with two clips for door hook which provide for holding the door open at 90 or 160 degrees.

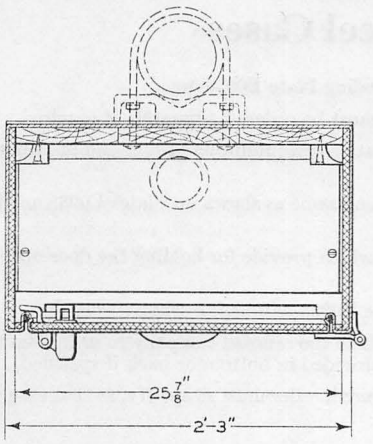
Door ventilators similar to those shown on Plate E0988 will be furnished if specified.

There are no base openings provided, it being left to the railroad company to drill holes to suit local conditions (knockouts for openings may be provided in bottom or back if specified).

If cable entrances shown on Plate E0999 are required, order must so specify, so that case will be provided with proper opening in base.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Welded Steel Case Complete, arranged for mounting to 4¾″ x 8″ concrete post. Equipped with celotex lining, one front hinged door, wooden floor boards and back boards, and protection flap for padlock. **(For painting and other information see note above.)**	54311-55
A1	as above, except without celotex lining.	
1	Gasket, 15′-6″ long, for door	43786-2



SECTION Y-Y

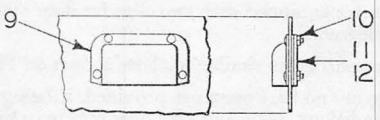
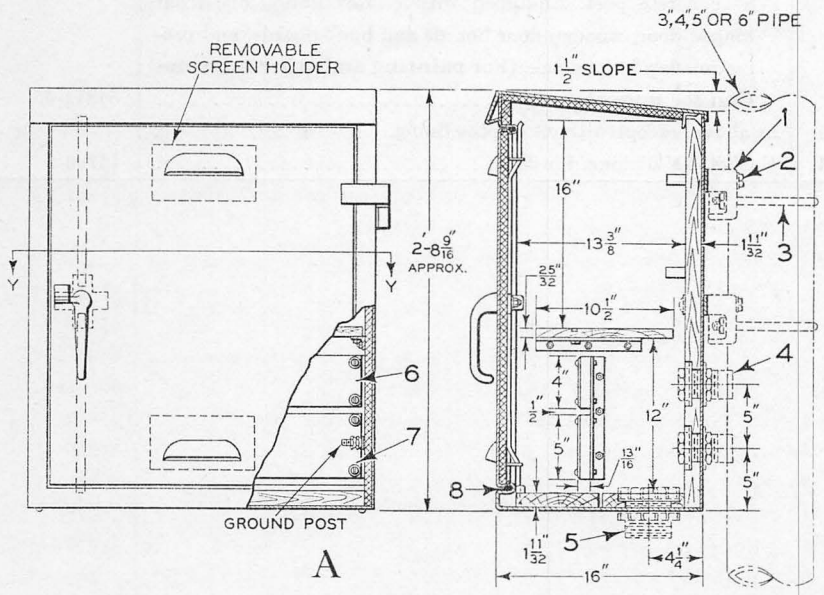


FIG. X



A

Welded Steel Cases

Welded Steel Cases

NOTE—See general information on page 91 preceding Plate E0970-1.

Cases Complete do not include padlocks which must be ordered separately if required.

Cases will be painted inside and out with one coat of rust inhibiting primer and finishing coats of gray inside unless otherwise specified.

Two wire openings for 2″ conduit are provided in rear of case and one opening for 3″ conduit in bottom of case as shown. These openings are made in the lining of case only, and knockouts are provided in the steel case so that any or all openings in the steel may be made in the field as required.

Door hooks will be supplied if specified.

Cases will be furnished with louvre type ventilators as shown, however, removable type ventilators as shown by Fig. X can be furnished if specified.

If cable entrances shown on Plate E0999 are required, order must so specify, so that case will be provided with proper opening in bottom.

See Plate E0990-2 for Type B Relay Racks, applicable to these cases.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Welded Steel Case Complete, arranged for mounting to 3″, 4″, 5″ or 6″ pipe, as specified. Equipped with celotex lining, one front hinged door, one removable shelf, two undrilled terminal boards, wooden floor boards and back boards. Does not include adapter Fig. 1, bolt Fig. 2, "U" bolt Fig. 3, or bushings Figs. 4 and 5 which must be ordered separately if required. **(For painting and other information see note above.)**	54311–52
A1	as above, except without celotex lining.	
A2	same as Fig. A, except with Type B relay rack as shown on Plate E0990-2, Fig. A	54311–52
1	Adapter, for 3″, 4″, 5″ or 6″ pipe	41850
2	Carriage Bolt, ½″ x 4½″ lg., with sq. nut and lock washer, for fastening adapter to case	0494–3 091–18
3	"U" Bolt Complete, for fastening adapter to 3″ pipe	41852
3a	as above, except for 4″ pipe	31359
3b	same as Fig. 3, except for 5″ pipe	30345
3c	same as Fig. 3, except for 6″ pipe	30346
4	Bushing Complete, 2″ dia.	42242 Gr. 1
5	Bushing Complete, 3″ dia.	42242–1 Gr. 1
6	Terminal Board, only, wood, 4″ wide, undrilled for case Fig. A.	54220–367

(*Continued on following page*)

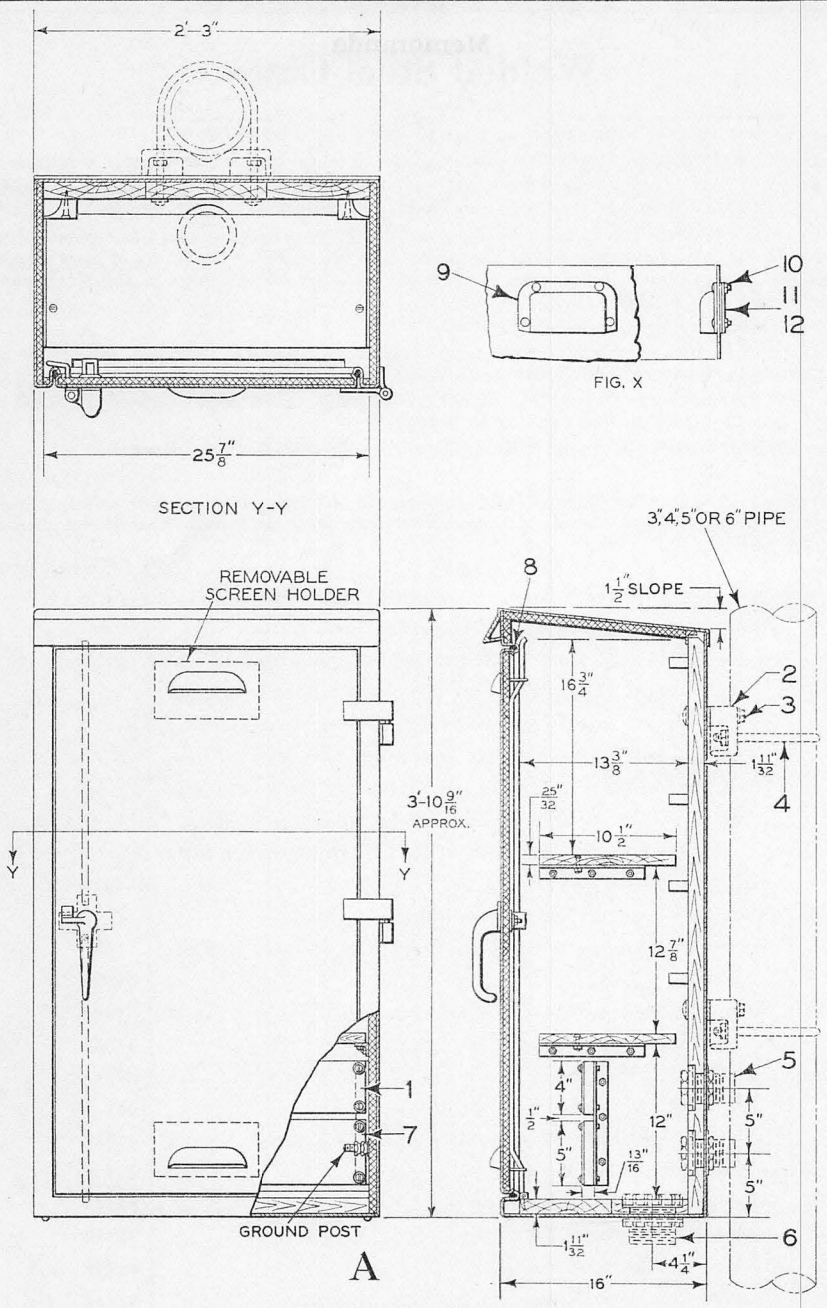
Welded Steel Cases

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
7	Terminal Board, only, 5″ wide, undrilled for case Fig. A	54220–368
8	Gasket, 8′-10″ long, for door	43786–2
9	Hood Complete, with four screws welded in place	14604 Gr. 1
10	Nut, ¼″-20 x 7/32″ hex., for screws on hood	0383
11	Screen, for ventilator	47527
12	Plate, for ventilator	47526

Memoranda

PLATE E0990



Welded Steel Cases

Welded Steel Cases

NOTE—See general information on page 91 preceding Plate E0970–1.

Cases Complete do not include padlocks which must be ordered separately if required.

Cases will be painted inside and out with one coat of rust inhibiting primer and finishing coats of gray inside unless otherwise specified.

Two wire openings for 2″ conduit are provided in rear of case and one opening for 3″ conduit in bottom of case as shown. These openings are made in the lining of case only, and knockouts are provided in the steel case so that any or all openings in the steel may be made in the field as required.

Door hooks will be supplied if specified.

Cases will be furnished with louvre type ventilators as shown, however, removable type ventilators as shown by Fig. X can be furnished if specified.

If cable entrances shown on Plate E0999 are required, order must so specify, so that case will be provided with proper opening in bottom.

See Plate E0990–2, for Type B Relay Racks, applicable to these cases.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Welded Steel Case Complete, arranged for mounting to 3″, 4″, 5″ or 6″ pipe, as specified. Equipped with celotex lining, one front hinged door, two removable shelves, two undrilled terminal boards, wooden floor boards and back boards. Does not include adapter Fig. 2, bolt Fig. 3, "U" bolts Fig. 4 or bushings Figs. 5 and 6 which must be ordered separately if required. **(For painting and other information see note above)**	54311–50
A1	as above, except without celotex lining.	
A2	same as Fig. A, except with Type B relay rack shown on Plate E0990-2, Fig. B	54311–50
1	Terminal Board, only, wood, 4″ wide, undrilled, for case Fig. A	54220–367
2	Adapter, for 3″, 4″, 5″ or 6″ pipe	41850
3	Carriage Bolt, ½″ x 4½″, with sq. nut and lock washer, for fastening adapter to case	0494–3 091–18
4	"U" Bolt Complete, for fastening adapter to 3″ pipe	41852
4a	as above, except for 4″ pipe	31359
4b	same as Fig. 4, except for 5″ pipe	30345
4c	same as Fig. 4, except for 6″ pipe	30346
5	Bushing Complete, 2″ dia.	42242 Gr. 1
6	Bushing Complete, 3″ dia.	42242–1 Gr. 1

(Continued on following page)

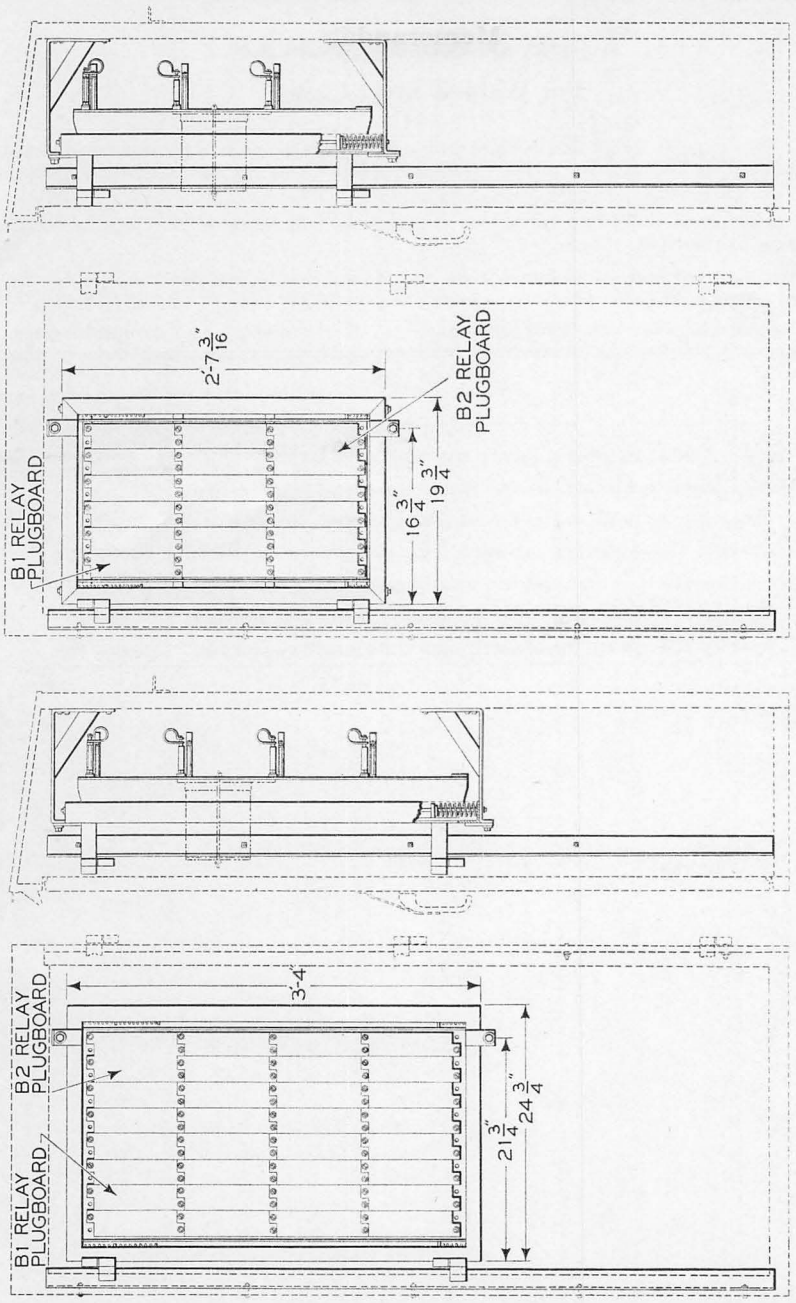
Welded Steel Cases

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
7	Terminal Board, only, wood, 5″ wide, undrilled, for case Fig. A	54220–368
8	Gasket, 11′-1″ long, for door	43786–2
9	Hood Complete, with four screws welded in place	14604 Gr. 1
10	Nut, ¼″-20 x 7/32″ hex., for screws on hood	0383
11	Screen, for ventilator	47527
12	Plate, for ventilator	47526

Memoranda

PLATE E0990-1



Type B Relay Racks

June 1954 GENERAL RAILWAY SIGNAL COMPANY

Type B Relay Racks

For Welded Steel Cases

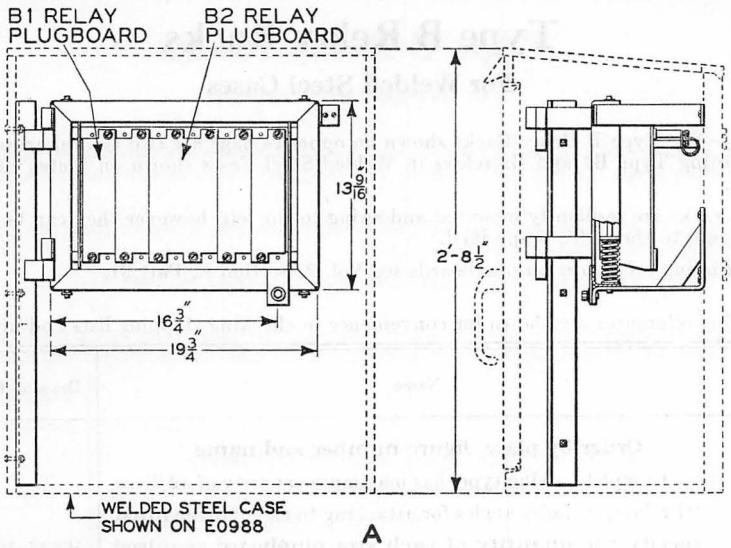
NOTE—The Type B Relay Racks shown on opposite page are two typical arrangements for mounting Type B1 and B2 relays in Welded Steel Cases shown on Plates E0982 and E0982-1.

These racks are resiliently mounted and swing to the left, however they can be supplied for swinging to the right, if specified.

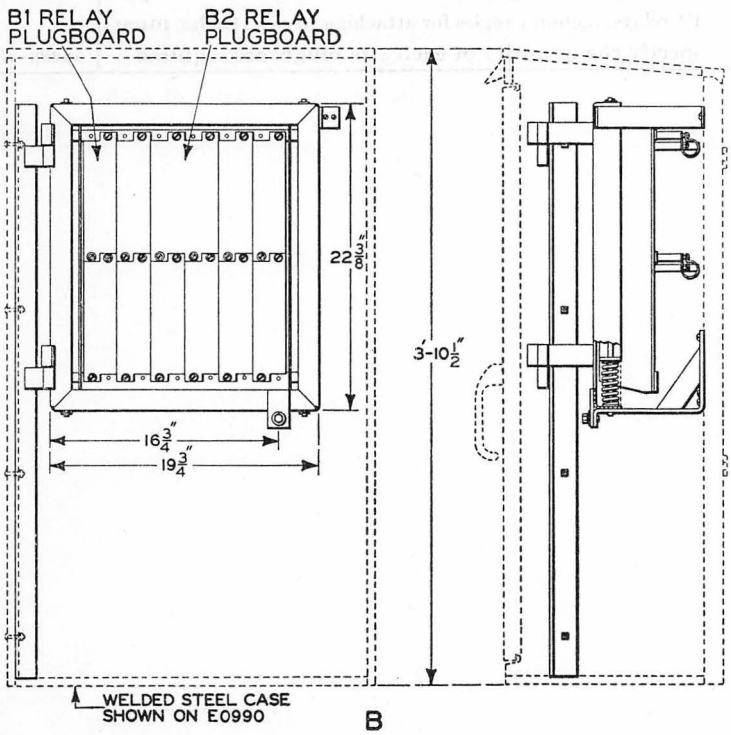
For ordering references on plugboards see Vol. 2, Section E, Part 31.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Rack Complete, swing type, has maximum capacity of 32 Type B1 relays, includes angles for attaching to case. **Order must specify the quantity of each size plugboard required**	56293–102
B	Rack Complete, swing type, has maximum capacity of 18 Type B1 relays, includes angles for attaching to case. **Order must specify the quantity of each size plugboard required** . . .	56293–103



A



B

Type B Relay Racks

June 1954 GENERAL RAILWAY SIGNAL COMPANY

Type B Relay Racks

For Welded Steel Cases

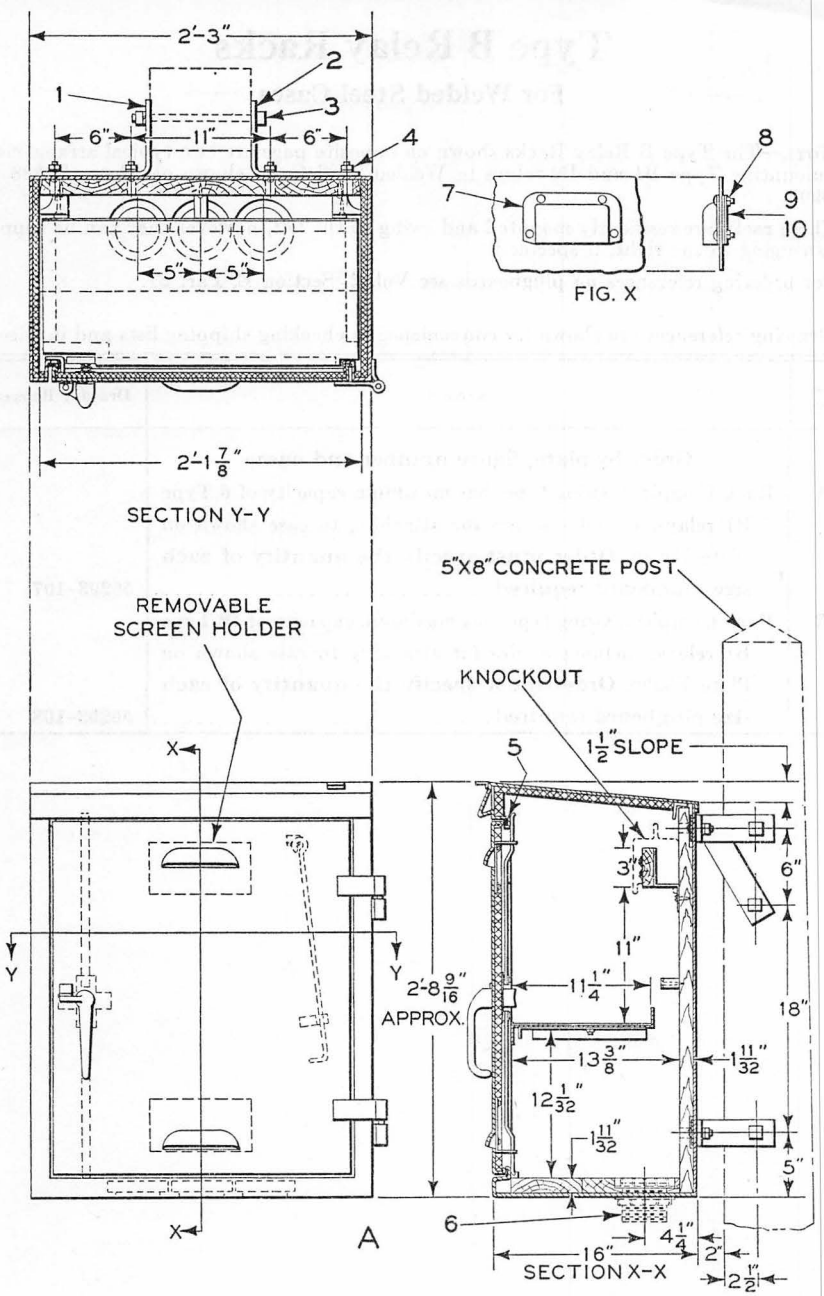
NOTE—The Type B Relay Racks shown on opposite page are two typical arrangements for mounting Type B1 and B2 relays in Welded Steel Cases shown on Plates E0988 and E0990.

These racks are resiliently mounted and swing to the left, however they can be supplied for swinging to the right, if specified.

For ordering references on plugboards see Vol. 2, Section E, Part 31.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Rack Complete, swing type, has maximum capacity of 6 Type B1 relays, includes angles for attaching to case shown on Plate E0988. **Order must specify the quantity of each size plugboard required**	56293–107
B	Rack Complete, swing type, has maximum capacity of 12 Type B1 relays, includes angles for attaching to case shown on Plate E0990. **Order must specify the quantity of each size plugboard required**	56293–108



Welded Steel Cases

Welded Steel Cases

NOTE—See general information on page 91 preceding Plate E0970-1.

Cases Complete do not include padlocks which must be ordered separately if required.

Cases will be painted inside and out with one coat of rust inhibiting primer and finishing coats of gray inside unless otherwise specified.

Cases are equipped with one clip for door hook, which provides for holding the door open at 160 degrees.

Cases will be furnished with louvre type ventilators as shown, however removable type ventilators as shown by Fig. X can be furnished if specified. Cases are provided with knockouts on both sides to which cable entrance couplings can be attached in the field. See Figs. Y and Z on Plate E0970-1 for method of assembling. Specify size and quantity of couplings required.

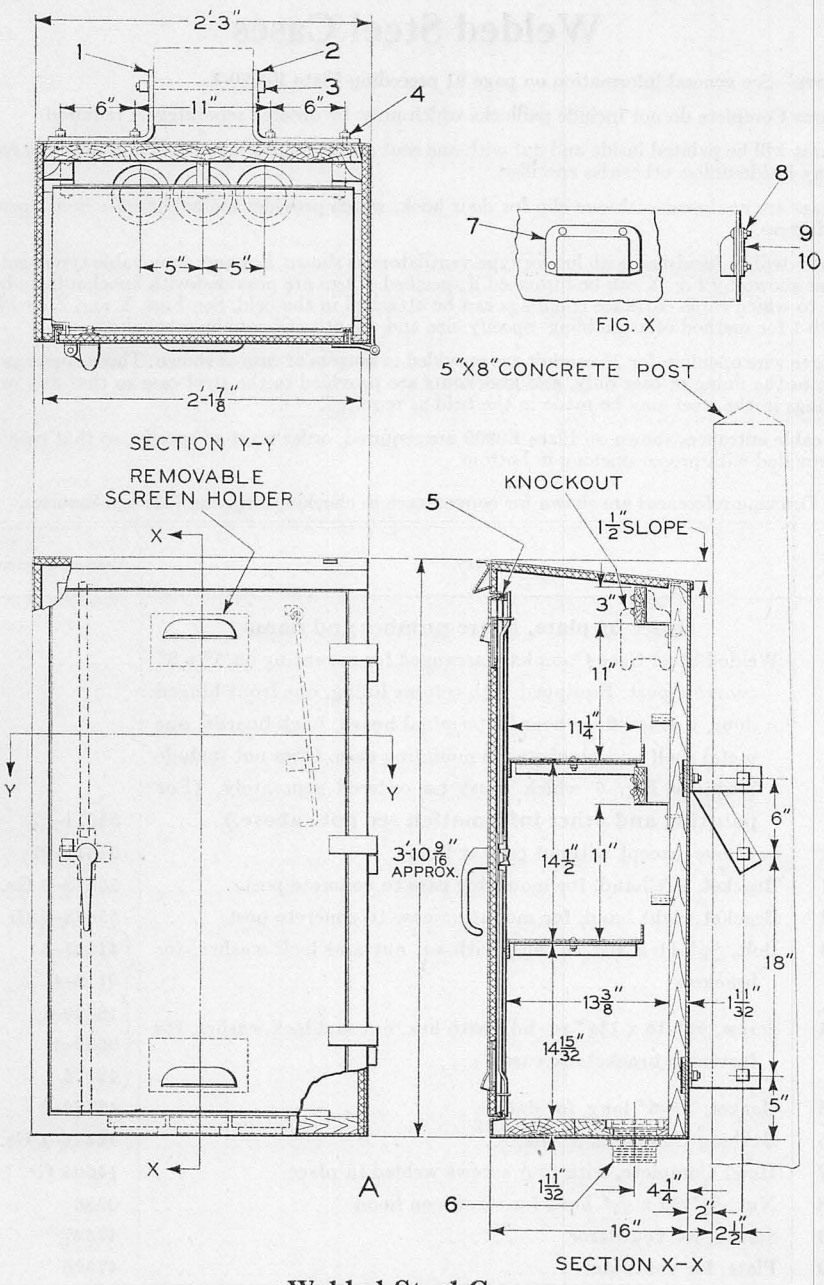
Three wire openings for 3″ conduit are provided in bottom of case as shown. These openings are made in the lining of case only, and knockouts are provided in the steel case so that any or all openings in the steel may be made in the field as required.

If cable entrances shown on Plate E0999 are required, order must so specify, so that case will be provided with proper opening in bottom.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Welded Steel Case Complete, arranged for mounting on 5″ x 8″ concrete post. Equipped with celotex lining, one front hinged door, wooden floor boards, terminal board, back boards, one metal shelf and brackets for mounting case. Does not include bushings Fig. 6 which must be ordered separately. **(For painting and other information see note above.)**	54311–97
A1	as above, except without celotex lining	54311–97
1	Bracket, left hand, for mounting case to concrete post	55478–9 Gr. 1
2	Bracket, right hand, for mounting case to concrete post	55478–9 Gr. 2
3	Bolt, 5/8″-11 x 10″ sq. hd., with sq. nut and lock washer, for brackets	41927–3 0113–4
4	Screw, 3/8″-16 x 1 1/4″ rd. hd., with hex. nut and lock washer, for fastening brackets to case	18429–1 0689–1 42175
5	Gasket, 15′-6″ long, for door	43786–2
6	Bushing Complete, 3″ dia.	42242–1 Gr. 1
7	Hood Complete, with four screws welded in place	14604 Gr. 1
8	Nut, 1/4″-20 x 7/32″ hex., for screws on hood	0383
9	Screen, for ventilator	47527
10	Plate, for ventilator	47526

PLATE E0993



Welded Steel Cases

Welded Steel Cases

NOTE—See general information on page 91 preceding Plate E0970-1.

Cases Complete do not include padlocks which must be ordered separately if required.

Cases will be painted inside and out with one coat of rust inhibiting primer and finishing coats of gray inside unless otherwise specified.

Cases are equipped with one clip for door hook, which provides for holding the door open at 160 degrees.

Cases will be furnished with louvre type ventilators as shown, however removable type ventilators as shown by Fig. X can be furnished if specified. Cases are provided with knockouts on both sides to which cable entrance couplings can be attached in the field. See Figs. Y and Z on Plate E0970-1 for method of assembling. Specify size and quantity of couplings required.

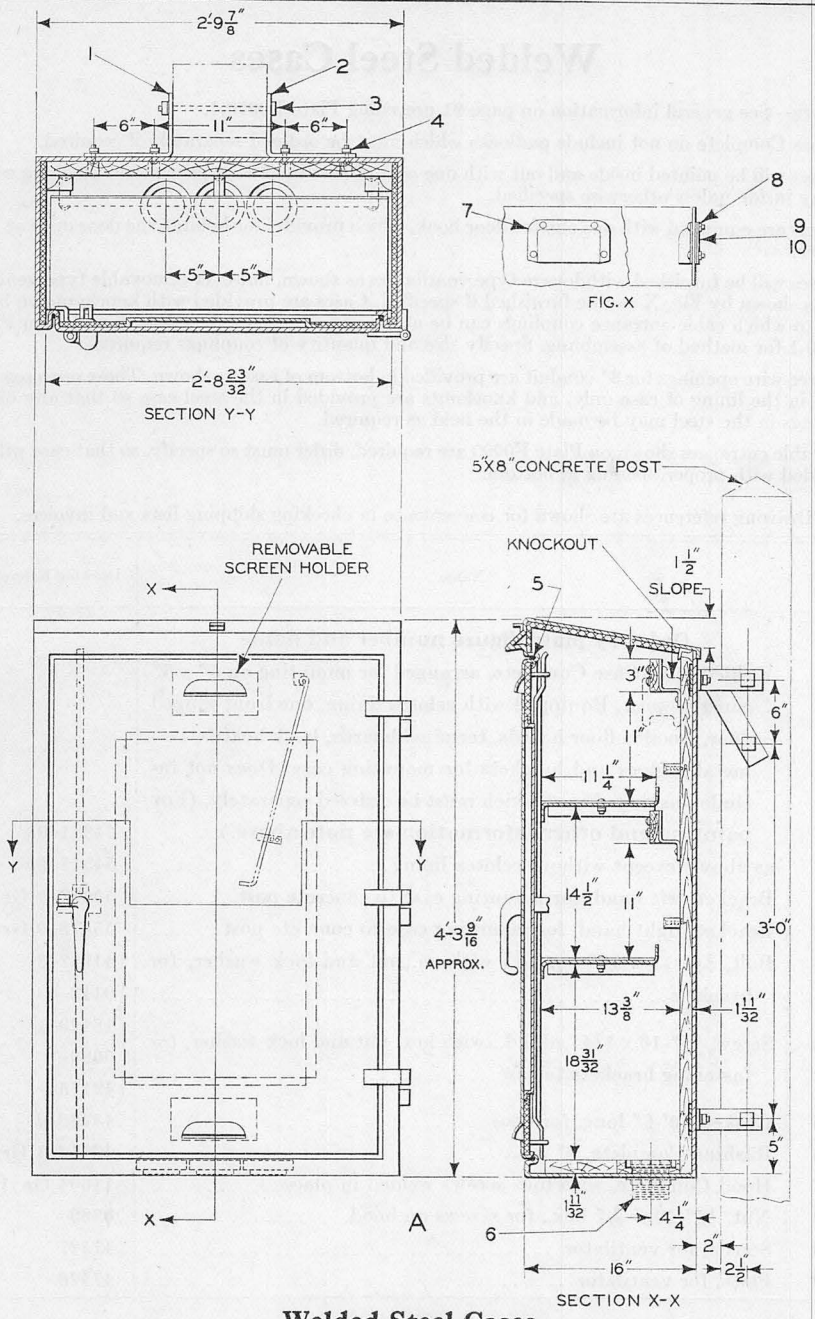
Three wire openings for 3″ conduit are provided in bottom of case as shown. These openings are made in the lining of case only, and knockouts are provided in the steel case so that any or all openings in the steel may be made in the field as required.

If cable entrances shown on Plate E0999 are required, order must so specify, so that case will be provided with proper opening in bottom.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Welded Steel Case Complete, arranged for mounting on 5″ x 8″ concrete post. Equipped with celotex lining, one front hinged door, wooden floor boards, terminal boards, back boards, two metal shelves and brackets for mounting case. Does not include bushings Fig. 6 which must be ordered separately. **(For painting and other information see note above.)**	54311–95
A1	as above, except without celotex lining	54311–95
1	Bracket, left hand, for mounting case to concrete post	55478–9 Gr. 1
2	Bracket, right hand, for mounting case to concrete post	55478–9 Gr. 2
3	Bolt, 5/8″-11 x 10″ sq. hd., with sq. nut and lock washer, for brackets	41927–3 0113–4
4	Screw, 3/8″-16 x 1 1/4″ rd. hd., with hex. nut and lock washer, for fastening brackets to case	18429–1 0689–1 42175
5	Gasket, 15′-6″ long, for door	43786–2
6	Bushing Complete, 3″ dia.	42242–1 Gr. 1
7	Hood Complete, with four screws welded in place	14604 Gr. 1
8	Nut, 1/4″-20 x 7/32″ hex., for screws on hood	0383
9	Screen, for ventilator	47527
10	Plate, for ventilator	47526

PLATE E0994



Welded Steel Cases

Welded Steel Cases

NOTE—See general information on page 91 preceding Plate E0970-1.

Cases Complete do not include padlocks which must be ordered separately if required.

Cases will be painted inside and out with one coat of rust inhibiting primer and finishing coats of gray inside unless otherwise specified.

Cases are equipped with one clip for door hook, which provides for holding the door open at 90 degrees.

Cases will be furnished with louvre type ventilators as shown, however removable type ventilators as shown by Fig. X can be furnished if specified. Cases are provided with knockouts on both sides to which cable entrance couplings can be attached in the field. See Figs. Y and Z on Plate E0970-1 for method of assembling. Specify size and quantity of couplings required.

Three wire openings for 3″ conduit are provided in bottom of case as shown. These openings are made in the lining of case only, and knockouts are provided in the steel case so that any or all openings in the steel may be made in the field as required.

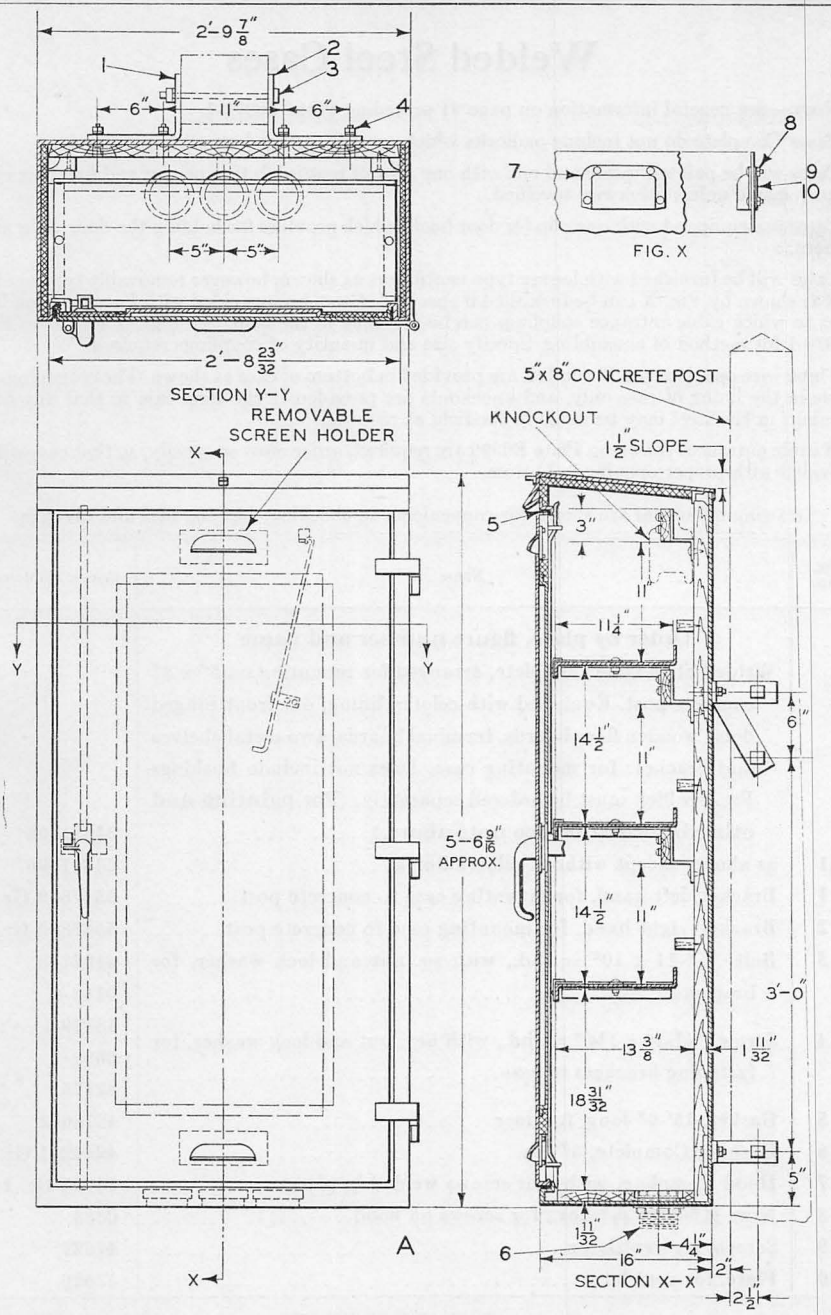
If cable entrances shown on Plate E0999 are required, order must so specify, so that case will be provided with proper opening in bottom.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Welded Steel Case Complete, arranged for mounting on 5″ x 8″ concrete post. Equipped with celotex lining, one front hinged door, wooden floor boards, terminal boards, two metal shelves and brackets for mounting case. Does not include bushings Fig. 6 which must be ordered separately. **(For painting and other information see note above.)**	54311–96
A1	as above, except without celotex lining	54311–96
1	Bracket, left hand, for mounting case to concrete post	55478–9 Gr. 1
2	Bracket, right hand, for mounting case to concrete post	55478–9 Gr. 2
3	Bolt, 5/8″-11 x 10″ sq. hd., with sq. nut and lock washer, for brackets	41927–3 0113–4
4	Screw, 3/8″-16 x 1 1/4″ rd. hd., with hex. nut and lock washer, for fastening brackets to case	18429-1 0689–1 42175
5	Gasket, 15′-6″ long, for door	43786–2
6	Bushing Complete, 3″ dia.	42242–1 Gr. 1
7	Hood Complete, with four screws welded in place	14604 Gr. 1
8	Nut, 1/4″-20 x 7/32″ hex., for screws on hood	0383
9	Screen, for ventilator	47527
10	Plate, for ventilator	47526

PLATE E0996

GENERAL RAILWAY SIGNAL COMPANY March 1949



Welded Steel Cases

March 1949 GENERAL RAILWAY SIGNAL COMPANY

Welded Steel Cases

NOTE—See general information on page 91 preceding Plate E0970-1.

Cases Complete do not include padlocks which must be ordered separately if required.

Cases will be painted inside and out with one coat of rust inhibiting primer and finishing coats of gray inside unless otherwise specified.

Cases are equipped with one clip for door hook, which provides for holding the door open at 90 degrees.

Cases will be furnished with louvre type ventilators as shown, however removable type ventilators as shown by Fig. X can be furnished if specified. Cases are provided with knockouts on both sides to which cable entrance couplings can be attached in the field. See Figs. Y and Z on Plate E0970-1 for method of assembling. Specify size and quantity of couplings required.

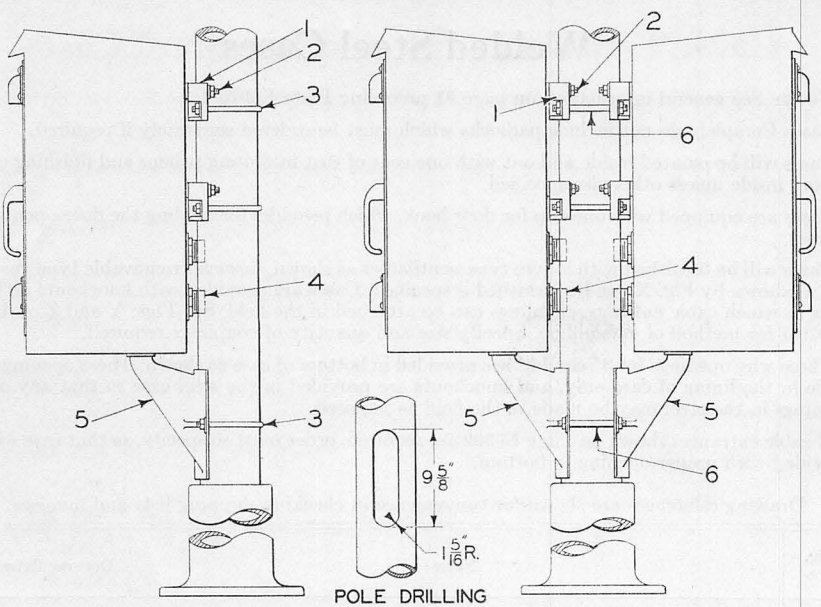
Three wire openings for 3″ conduit are provided in bottom of case as shown. These openings are made in the lining of case only, and knockouts are provided in the steel case so that any or all openings in the steel may be made in the field as required.

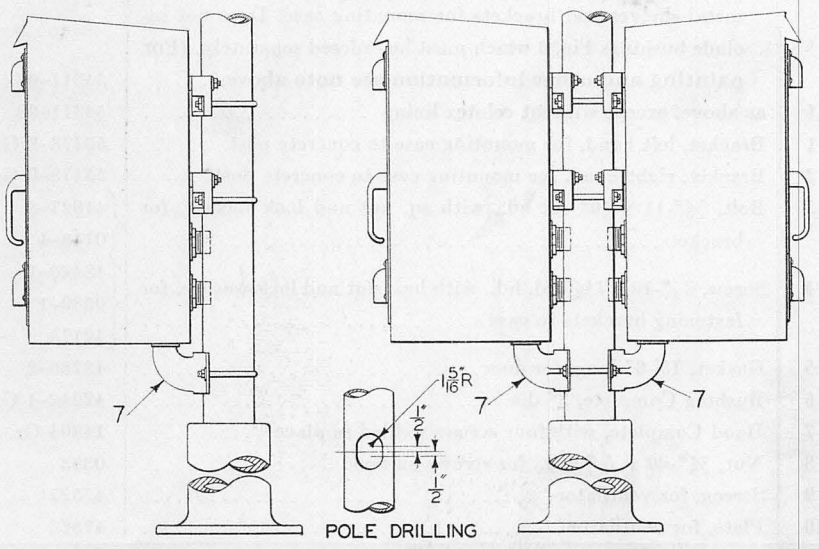
If cable entrances shown on Plate E0999 are required, order must so specify, so that case will be provided with proper opening in bottom.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Welded Steel Case Complete, arranged for mounting on 5″ x 8″ concrete post. Equipped with celotex lining, one front hinged door, wooden floor boards, terminal boards, back boards, three metal shelves and brackets for mounting case. Does not include bushings Fig. 6 which must be ordered separately. **(For painting and other information see note above.)**	54311–98
A1	as above, except without celotex lining	54311–98
1	Bracket, left hand, for mounting case to concrete post	55478–9 Gr. 1
2	Bracket, right hand, for mounting case to concrete post	55478–9 Gr. 2
3	Bolt, 5/8″-11 x 10″ sq. hd., with sq. nut and lock washer, for brackets	41927–3 0113–4
4	Screw, 3/8″-16 x 1 1/4″ rd. hd., with hex. nut and lock washer, for fastening brackets to case	18429–1 0689–1 42175
5	Gasket, 15′-6″ long, for door	43786–2
6	Bushing Complete, 3″ dia.	42242–1 Gr. 1
7	Hood Complete, with four screws welded in place	14604 Gr. 1
8	Nut, 1/4″-20 x 7/32″ hex., for screws on hood	0383
9	Screen, for ventilator	47527
10	Plate, for ventilator	47526

PLATE E0999





Cable Entrances for Welded Steel Cases

March 1949 GENERAL RAILWAY SIGNAL COMPANY

Cable Entrances for Welded Steel Cases

NOTE—The cable entrances shown on this plate are applicable to cases shown on Plates E0984 to E0996.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
1	Adapter, for 4″, 5″ or 6″ pipe	41850–1
2	Carriage Bolt, ½″ x 4½″ with sq. nut and lock washer, for fastening adapter to case	0494–1 091–7
3	"U" Bolt Complete, with hex. nut and lock washer, for fastening case to 4″ pipe	31359 626–35
3a	as above, except for 5″ pipe	30345 626–35
3b	same as Fig. 3, except for 6″ pipe	30346 626–35
4	Bushing Complete, 2″ dia.	42242 Gr. 1
5	Coupling, large type, for cable entrance	45689–83
5a	as above, except with hand hole	45688–84 Gr. 1
6	Stud Complete, ½″-13 x 5½″ with hex. nut and lock washer, for use when two cases are mounted to 4″ pipe	42240 Gr. 1 091–7
6a	as above, except for 5″ pipe	42240 Gr. 2 091–7
6b	same as Fig. 6 except for 6″ pipe	42240 Gr. 3 091–7
7	Coupling, small type, for cable entrance	45689–81

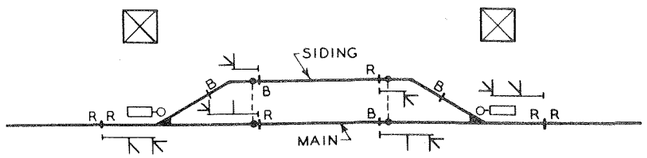
This plate provides ordering references for the proper size housings completely wired and equipped for a typical location as illustrated. See general information below for items that are and are not provided.

Refer to tabulation for ordering reference and specify Plate E0928 Fig. A, A1 or B1, etc.

GENERAL INFORMATION

Housings are supplied for use with:

1. 110 volt, 60 cycle power.
2. 3-wire APB on main through siding limits.
3. Siding track circuits (for indication only).
4. Regular d-c. storage battery fed track circuits, except switch detector circuits, for which primary-secondary relays are supplied.
5. Maintainer telephone on cTc line.
6. Model 5C or 5D switch machines per Catalog Plates J3102 and J3134.
7. One block light between control points.



Housings are supplied with:

1. Type B plug-in relays for safety circuits.
2. Type A plug-in relays for cTc circuits.
3. Maintainer call light.
4. Transformers, rectifiers and sundries, such as: wire, connectors, tagging, arresters, fuse and terminal blocks, bungalow lighting, etc., per G-R-S practice.

Housings are not arranged for:

1. Any line circuits, except the APB, cTc and A-c. power.
2. Approach lighting.

Housings do not include:

1. Telephones.
2. Batteries, for Types K, K1 or K2 coded control, one 24-volt battery for cTc and for switch operation: two 10-volt batteries for local and line circuits, and one cell for each track circuit (2 per housing are required).

   Syncroscan requires same as above except the battery for cTc and switch operation must be 28 volts.

   The 6' x 6' housings have two battery shelves each 5-1/2' long while the 8' x 8' housings have two shelves - one 5-1/2' and the other 7-1/2' long.
3. Spare materials.

	ORDERING REFERENCES															
	Fig. A	Fig. A1	Fig. A2	Fig. A3	Fig. B	Fig. B1	Fig. B2	Fig. B3	Fig. C	Fig. C1	Fig. C2	Fig. C3	Fig. D	Fig. D1	Fig. D2	Fig. D3
Housing, Size	6' x 6'	6' x 6'	8' x 8'	8' x 8'	6' x 6'	6' x 6'	8' x 8'	8' x 8'	6' x 6'	6' x 6'	8' x 8'	8' x 8'	6' x 6'	6' x 6'	8' x 8'	8' x 8'
Telephone Booth	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Housing Arranged for Use With																
Coded Control, Type (for K, K1 or K2 - state which)	K, K1 or K2	Syncro-scan	K, K1 or K2	Syncro-scan	K, K1 or K2	Syncro-scan	K, K1 or K2	Syncro-scan	K, K1 or K2	Syncro-scan	K, K1 or K2	Syncro-scan	K, K1 or K2	Syncro-scan	K, K1 or K2	Syncro-scan
Type APB Circuits between Sidings	3-wire	3-wire	3-wire	3-wire	2-wire	2-wire	2-wire	2-wire	3-wire	3-wire	3-wire	3-wire	2-wire	2-wire	2-wire	2-wire
Signals, Type	SA	SA	SA	SA	SA	SA	SA	SA	D or G	D or G	D or G	D or G	D or G	D or G	D or G	D or G

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GENERAL RAILWAY SIGNAL COMPANY
ROCHESTER, N. Y. December 1955

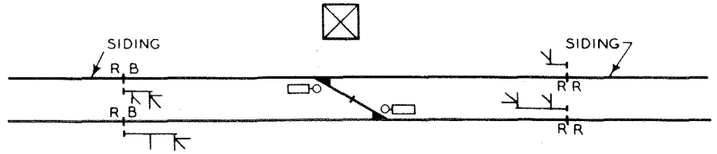
This plate provides ordering references for the proper size housings completely wired and equipped for a typical location as illustrated. See general information below for items that are and are not provided.

Refer to tabulation for ordering reference and specify Plate E0929 Fig. A, A1 or B1, etc.

GENERAL INFORMATION

Housings are supplied for use with:

1. 110 volt, 60 cycle power.
2. Siding track circuits (for indication only).
3. Regular d-c. storage battery fed track circuits, except switch detector circuits, for which primary-secondary relays are supplied.
4. Maintainer telephone on cTc line.
5. Model 5C or 5D switch machines per Catalog Plates J3102 and J3134.
6. One block light between control points.



Housings are supplied with:

1. Type B plug-in relays for safety circuits.
2. Type A plug-in relays for cTc circuits.
3. Maintainer call light.
4. Transformers, rectifiers and sundries, such as: wire, connectors, tagging, arresters, fuse and terminal blocks, bungalow lighting, etc., per G-R-S practice.

Housings are not arranged for:

1. Any line circuits, except APB, cTc and A-c. power.
2. Approach lighting.

Housings do not include:

1. Telephones.
2. Batteries, for Types K, K1 or K2 coded control, one 24-volt battery for cTc and for switch operation: two 10-volt batteries for local and line circuits, and one cell for each track circuit (2 per housing are required).

   Syncroscan requires same as above except the battery for cTc and switch operation must be 28 volts.

   The 6' x 6' housings have two battery shelves each 5-1/2' long while the 8' x 8' housings have two shelves - one 5-1/2' and the other 7-1/2' long.
3. Spare materials.

	ORDERING REFERENCES															
	Fig. A	Fig. A1	Fig. A2	Fig. A3	Fig. B	Fig. B1	Fig. B2	Fig. B3	Fig. C	Fig. C1	Fig. C2	Fig. C3	Fig. D	Fig. D1	Fig. D2	Fig. D3
Housing, Size	6' x 6'	6' x 6'	8' x 8'	8' x 8'	6' x 6'	6' x 6'	8' x 8'	8' x 8'	6' x 6'	6' x 6'	8' x 8'	8' x 8'	6' x 6'	6' x 6'	8' x 8'	8' x 8'
Telephone Booth	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Housing Arranged for Use With																
Coded Control, Type (for K, K1 or K2 - state which)	K, K1 or K2	Syncro-scan	K, K1 or K2	Syncro-scan	K, K1 or K2	Syncro-scan	K, K1 or K2	Syncro-scan	K, K1 or K2	Syncro-scan	K, K1 or K2	Syncro-scan	K, K1 or K2	Syncro-scan	K, K1 or K2	Syncro-scan
Type APB Circuits between Control Points	3-wire	3-wire	3-wire	3-wire	2-wire	2-wire	2-wire	2-wire	3-wire	3-wire	3-wire	3-wire	2-wire	2-wire	2-wire	2-wire
Signals, Type	SA	SA	SA	SA	SA	SA	SA	SA	D or G	D or G	D or G	D or G	D or G	D or G	D or G	D or G

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GENERAL RAILWAY SIGNAL COMPANY
ROCHESTER, N. Y. December 1955

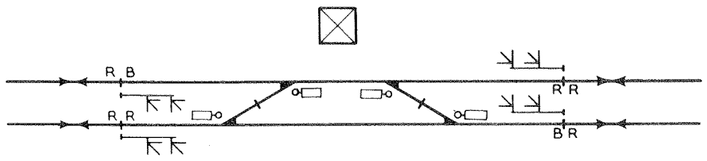
This plate provides ordering references for the proper size housings completely wired and equipped for a typical location as illustrated. See general information below for items that are and are not provided.

Refer to tabulation for ordering reference and specify Plate E0930 Fig. A, A1 or B1, etc.

GENERAL INFORMATION

Housings are supplied for use with:

1. 110 volt, 60 cycle power.
2. Regular d-c. storage battery fed track circuits, except switch detector circuits, for which primary-secondary relays are supplied.
3. Maintainer telephone on cTc line.
4. Model 5C or 5D switch machines per Catalog Plates J3102 and J3134.
5. One block light per track between control points.



Housings are supplied with:

1. Type B plug-in relays for safety circuits.
2. Type A plug-in relays for cTc circuits.
3. Maintainer call light.
4. Transformers, rectifiers and sundries, such as: wire, connectors, tagging, arresters, fuse and terminal blocks, bungalow lighting, etc., per G-R-S practice.

Housings are not arranged for:

1. Any line circuits, except the APB, cTc and A-c. power.
2. Approach lighting.

Housings do not include:

1. Telephones.
2. Batteries, for Types K, K1 or K2 coded control, one 24-volt battery for cTc and for switch operation: two 10-volt batteries for local and line circuits, and one cell for each track circuit (2 per housing are required).

   Syncroscan requires same as above except the battery for cTc and switch operation must be 28 volts.

   The 8' x 8' housings have two shelves - one 5-1/2' and the other 7-1/2' long.
3. Spare materials.

	ORDERING REFERENCES															
	Fig. A	Fig. A1	Fig. A2	Fig. A3	Fig. B	Fig. B1	Fig. B2	Fig. B3	Fig. C	Fig. C1	Fig. C2	Fig. C3	Fig. D	Fig. D1	Fig. D2	Fig. D3
Housing, Size	8' x 8'	8' x 8'	8' x 8'	8' x 8'	8' x 8'	8' x 8'	8' x 8'	8' x 8'	8' x 8'	8' x 8'	8' x 8'	8' x 8'	8' x 8'	8' x 8'	8' x 8'	8' x 8'
Telephone Booth	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Housing Arranged for Use With																
Coded Control, Type (for K, K1 or K2 - state which)	K, K1 or K2	Syncro-scan	K, K1 or K2	Syncro-scan	K, K1 or K2	Syncro-scan	K, K1 or K2	Syncro-scan	K, K1 or K2	Syncro-scan	K, K1 or K2	Syncro-scan	K, K1 or K2	Syncro-scan	K, K1 or K2	Syncro-scan
Type APB Circuits between Control Points - both tracks	3-wire	3-wire	3-wire	3-wire	2-wire	2-wire	2-wire	2-wire	3-wire	3-wire	3-wire	3-wire	2-wire	2-wire	2-wire	2-wire
Signals, Type	SA	SA	SA	SA	SA	SA	SA	SA	D or G	D or G	D or G	D or G	D or G	D or G	D or G	D or G

GENERAL RAILWAY SIGNAL COMPANY
ROCHESTER, N. Y. December 1955

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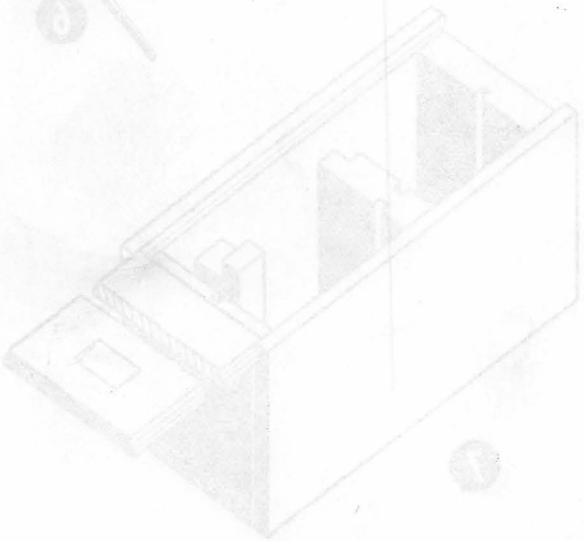
Section E, Part 39

Type B Relays Tools, Fixtures and Supplies



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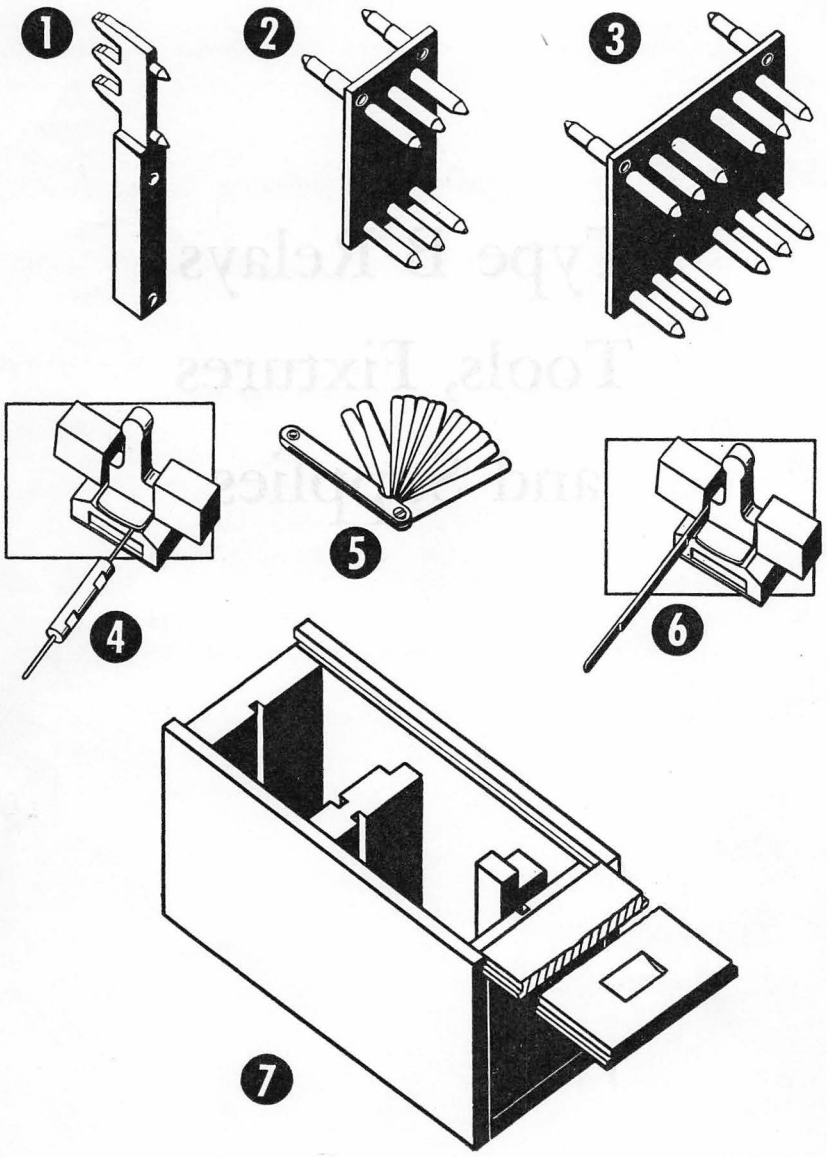
GENERAL RAILWAY SIGNAL COMPANY April 1951

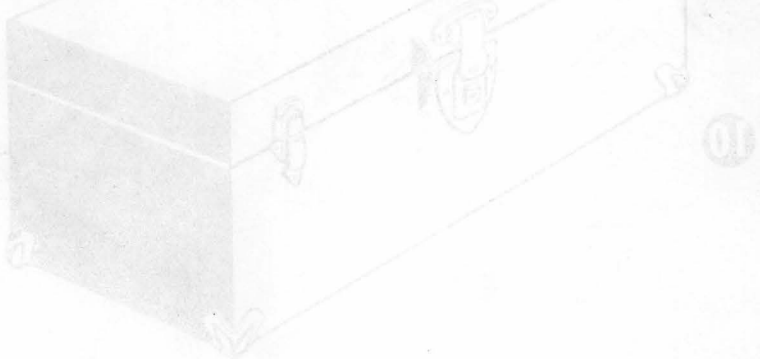


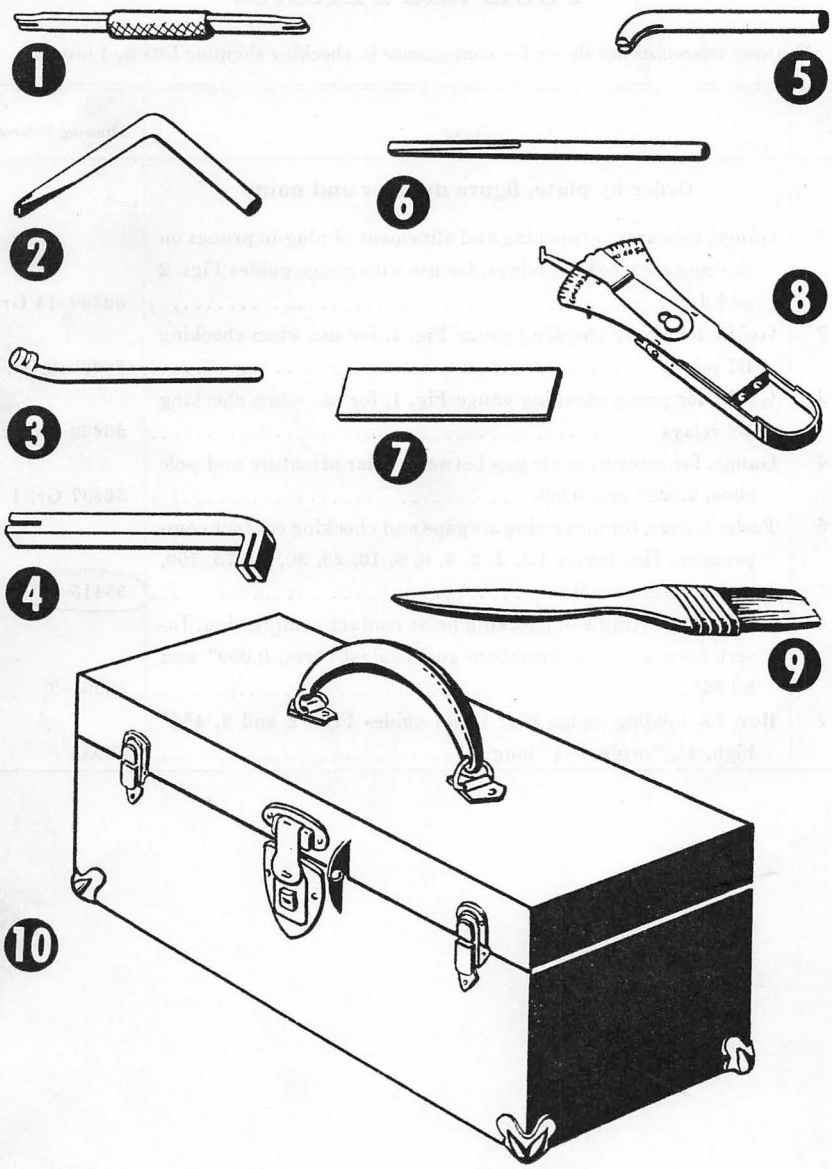
Tools and Fixtures

Tools and Fixtures

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
1	Gauge, for checking opening and alinement of plug-in prongs on the contact blocks of relays, for use with gauge guides Figs. 2 and 3	56260–14 Gr. 1
2	Guide, for prong checking gauge Fig. 1, for use when checking B1 relays	56260–8 Gr. 1
3	Guide, for prong checking gauge Fig. 1, for use when checking B2 relays	56260–10 Gr. 1
4	Gauge, for measuring air gap between polar armature and pole shoe, 0.028″ and 0.036″	56537 Gr. 1
5	Feeler Gauge, for measuring air gaps and checking contact compression. Has leaves 1.5, 2, 3, 4, 6, 8, 10, 20, 30, 40, 75, 100, and 200 thousandths	55415–2
6	Gauge, for setting and checking polar contact compression. Insert between polar armature and neutral cores. 0.030″ and 0.033″	56054–3
7	Box, for holding gauge Fig. 1 and guides Figs. 2 and 3, 4⅜″ high, 4¼″ wide, 9⅛″ long	56935





Tools and Supplies

April 1951 GENERAL RAILWAY SIGNAL COMPANY

Tools and Supplies

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
1	Tool, for bending relay contacts, 5½″ long	47951–24
2	Tool, for bending stop and pressure plates, 3¼″ long	47951–25
3	Tool, for bending inner legs of armature extension, 4½″ long	47951–23
4	Tool, for bending outer legs of armature extension, 4½″ long	48792
5	Tool, for bending contact prongs on back of relay, 3⅝″ long	47951–28
6	Tool, for checking contact alinement, 6″ long	47951–21
7	Contact Burnishing Tool, 4″ long, ⅞″ wide	55411–3
8	Pressure Gauge, 50-0-50 grams	55412
8a	Pressure Gauge, 0-150 grams	55412–4
9	Brush, for cleaning relays, 7½″ long, camel hair, 1″ wide; metal ferrule is insulated	55395
10	Tool Box, with tray and key, 7″ high, 7″ wide, 16″ long	56211–1

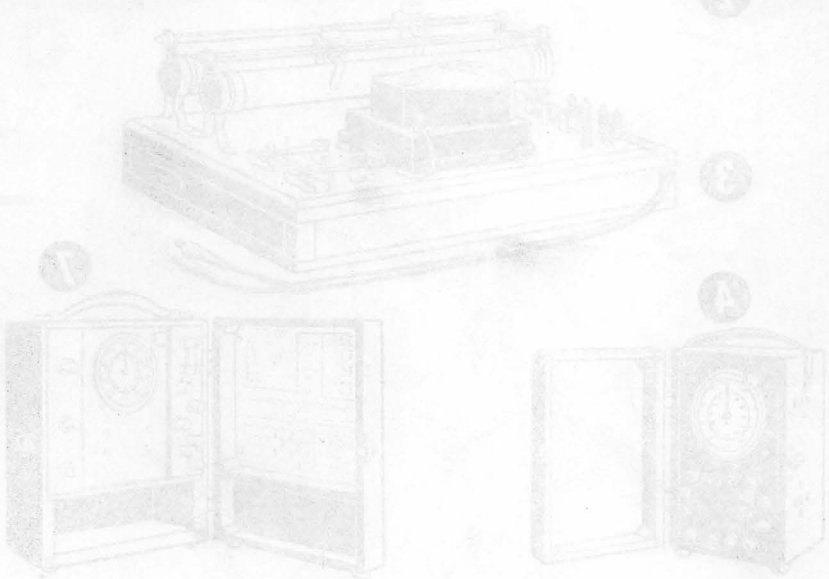
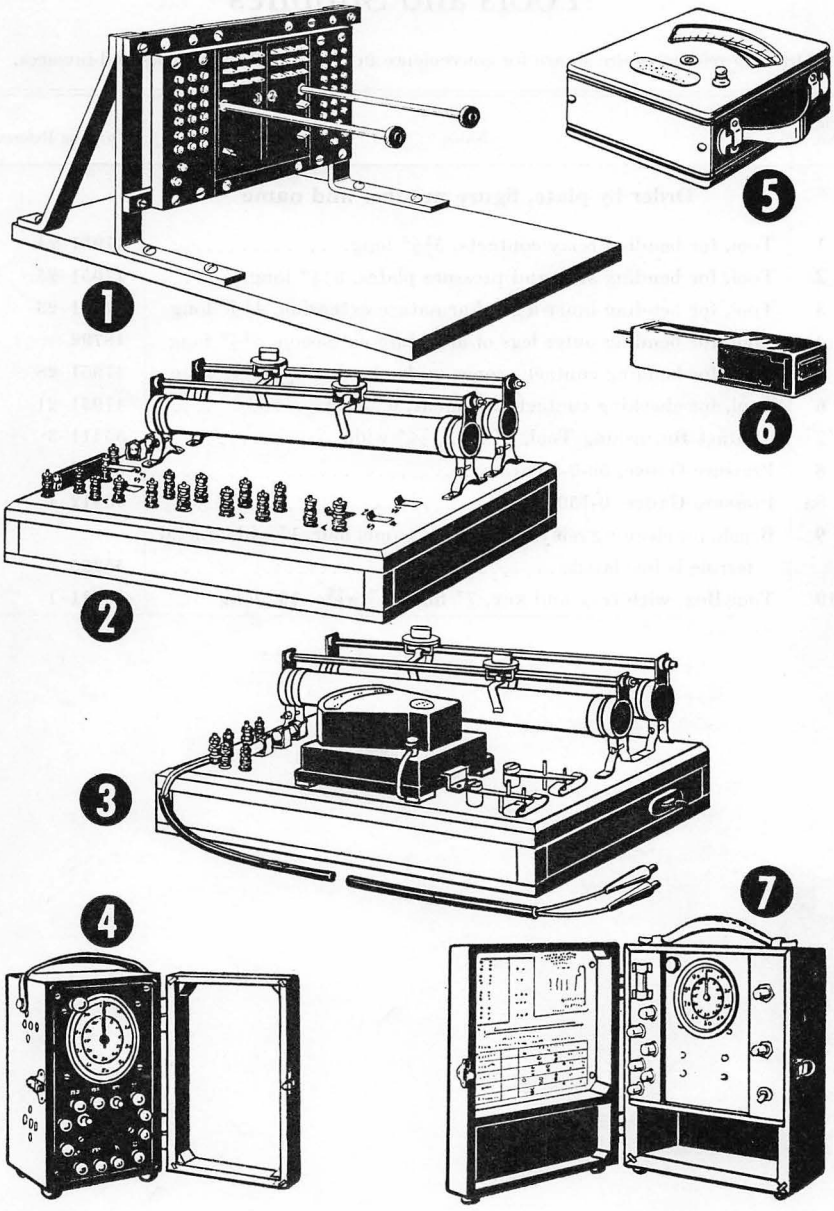


PLATE E3905



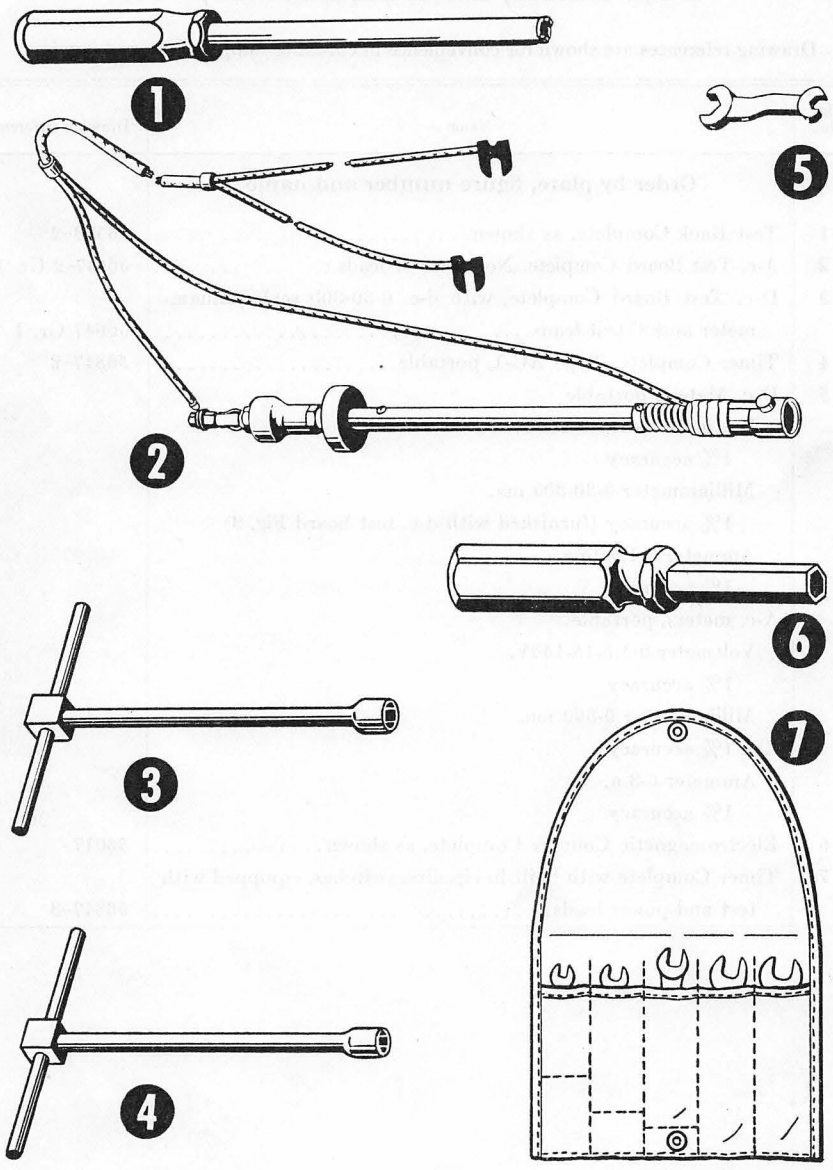
Test Rack, Boards, Meters, etc.

Test Rack, Boards, Meters, etc.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
1	Test Rack Complete, as shown	56573–2
2	A-c. Test Board Complete. No meter or leads	56647–2 Gr. 1
3	D-c. Test Board Complete, with d-c. 0-30-300 scale milliammeter and 8′ test leads	56647 Gr. 1
4	Timer Complete, Type AC-1, portable	56847–2
5	D-c. Meters, portable Voltmeter 0-15-30-150V. 1% accuracy Milliammeter 0-30-300 ma. 1% accuracy (furnished with d-c. test board Fig. 3) Ammeter 0-1.5-15 a. 1% accuracy A-c. meters, portable Voltmeter 0-1.5-15-150V. 1% accuracy Milliammeter 0-300 ma. 1% accuracy Ammeter 0-3 a. 1% accuracy	
6	Electromagnetic Counter Complete, as shown	56017
7	Timer Complete with built-in circuits, switches, equipped with test and power leads	56847–3

PLATE E3907



Wrenches

April 1951 GENERAL RAILWAY SIGNAL COMPANY

Wrenches

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No	Name	Drawing Reference
	Order by plate, figure number and name	
1	Terminal Nut Wrench, (E post wrench) 11″ long, 7¼″ shank.	55393–3 Gr. 1
2	Tool, for taking current readings through E post. Has 4′ leads with terminals for attaching to meter	56622–1 Gr. 1
3	Socket Wrench, ½″ hex. for cap screws holding cores to relay base	15197–29
4	Socket Wrench, $\frac{7}{16}$″ hex. for nuts holding guide rods to plugboards and for nuts holding plugboards to mounting bars	15197–6
5	Open End Wrench, 3″ long, for ⅜″ and ½″ terminal post and guide rod nuts	43576–1
6	Socket Wrench, ½″ hex., polished nickel plated, plastic handle, for terminal post nuts	15194–10 Gr. 1
7	5-piece Open End Wrench Set, in case. Includes $\frac{3}{16}$ x $\frac{7}{32}$, ¼ x $\frac{9}{32}$, $\frac{5}{16}$ x $\frac{9}{32}$, ⅜ x $\frac{7}{16}$, $\frac{13}{32}$ x $\frac{15}{32}$	55406

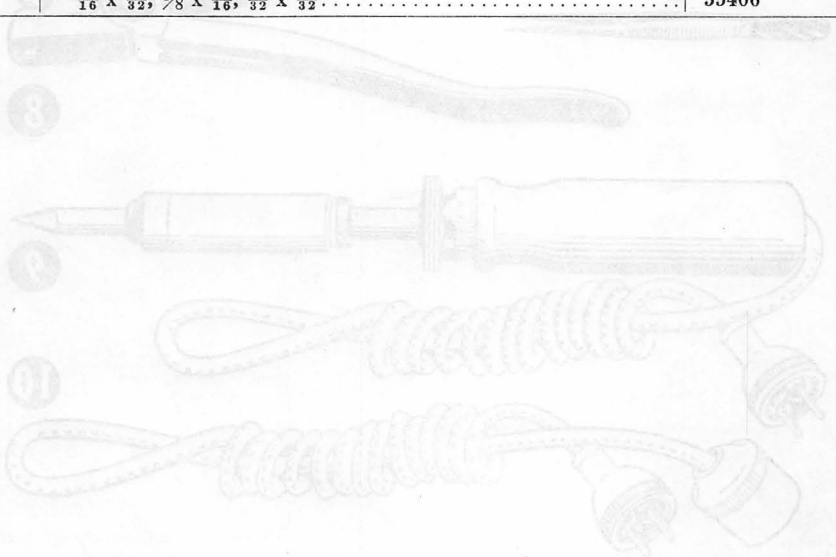
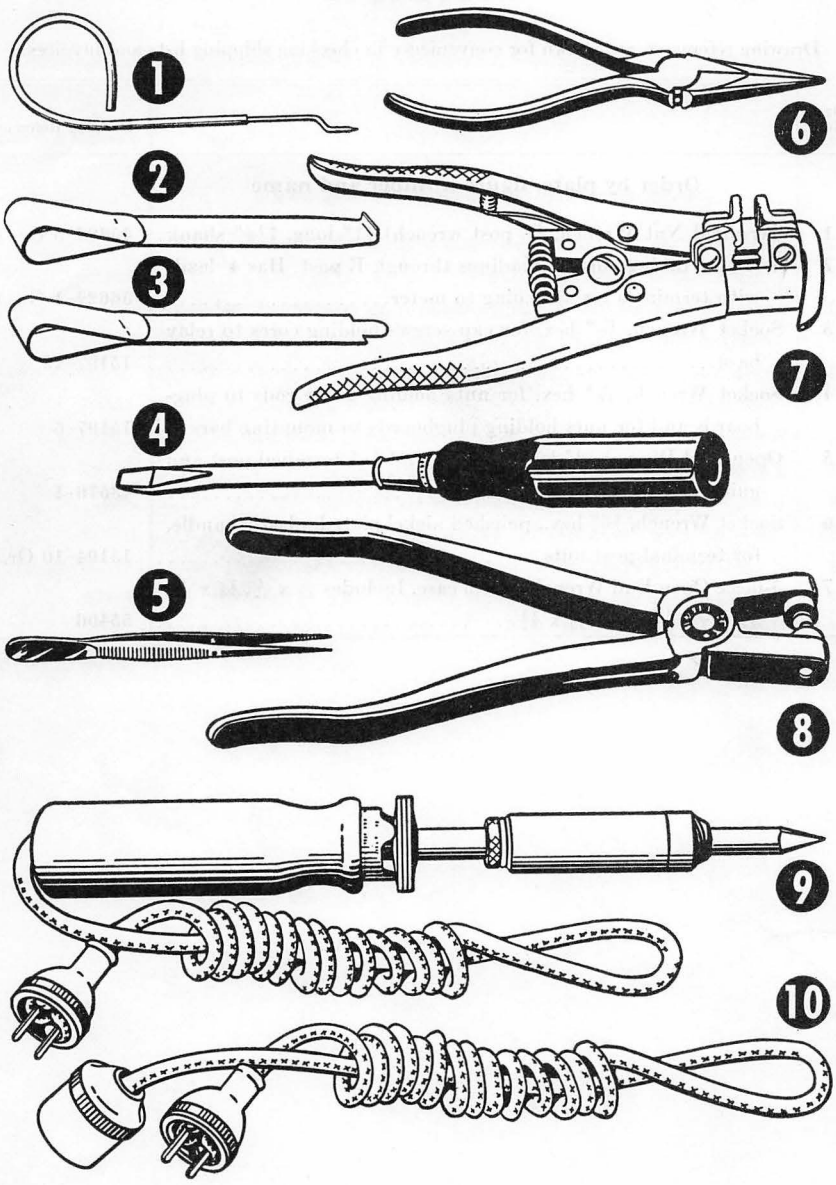


PLATE E3909



Tools

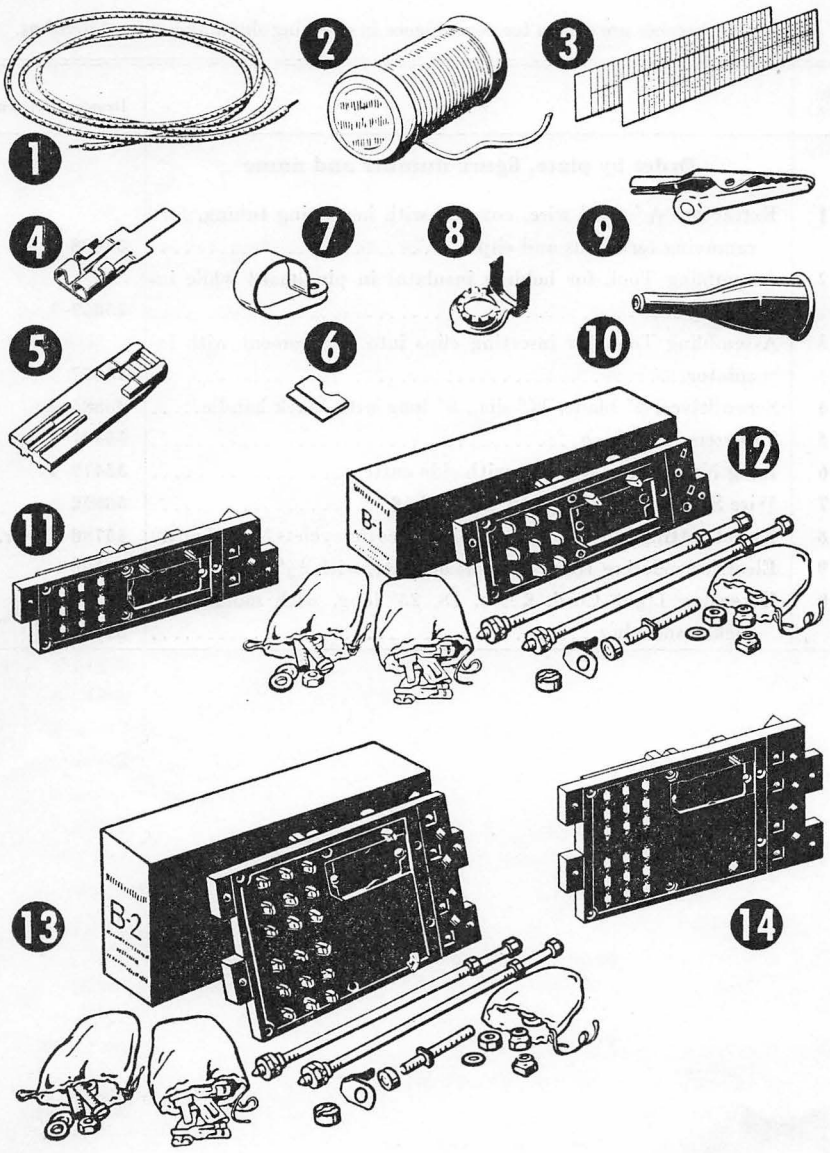
April 1951 GENERAL RAILWAY SIGNAL COMPANY

Tools

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No	Name	Drawing Reference
	Order by plate, figure number and name	
1	Extractor, $\frac{1}{16}$″ steel wire, covered with insulating tubing, for removing terminals and clips	59688
2	Assembling Tool, for holding insulator in plugboard while inserting clip	15657–1
3	Assembling Tool, for inserting clips into engagement with insulator	15657
4	Screwdriver, 4″ blade, ¼″ dia., 9″ long with black handle	38885–4
5	Tweezers, $4\frac{3}{8}$″ long	55427–2
6	Long Nose Pliers, 6″ long, with side cutters	55417–1
7	Wire Stripper, for AWG 10, 14, and 16	56852
8	Eyelet Setting Pliers, with one pair of dies for eyelets for ¼″ post.	45786–11 Gr. 4
9	Electric Soldering Iron, 110-volt 50-watt, with ½″ tip	55408
10	Extension Light Cord, 2 No. 18, 25′ long, with molded-on socket and plug	55409

PLATE E3911



Supplies

Supplies

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
1	Wire, flexible copper, single conductor, $\frac{1}{32}$″ wall of superaging rubber insulation, single cotton braid, flame retarding, moisture resisting, black colored finish. AWG 10, 12, 14, 16	G-R-S Spec. MS2-143
2	Rosin Core Solder	G-R-S Spec. MS2-118
3	Wrap-around tags, for identifying wires—	
	For B1 relays	59539-405
	For B2 relays	59539-406
4	Terminals	55871-19
5	Insulators	55862-8
6	Plastic Clips	38043-37
7	Cable Hangers, insulated. For cable diameters:	
	$\frac{7}{16}$″	29855
	$\frac{9}{2}$″	29855-1
	$\frac{27}{32}$″	29855-2
	$\frac{31}{32}$″	29855-3
	$1\frac{7}{32}$″	29855-4
	$1\frac{15}{32}$″	29855-5
	$1\frac{23}{32}$″	29855-6
	$1\frac{31}{32}$″	29855-7
8	Wire Eyelets, with clamping ears for $\frac{1}{4}$″ or $\frac{5}{16}$″ posts, take up to No. 9 wire	17819-5
9	Alligator Clips	56276
10	Rubber Insulators, for clips Fig. 9—	
	Red	56277
	Black	56277-1
11	Blank Plugboard, for B1 relays	56022-26
12	Plugboard Kits—(See note on next page)	
	For B1 relays	59686-5 Gr. 1
13	Plugboard Kits—(See note on next page)	
	For B2 d-c. relays	59686-7 Gr. 1
	For B2 vane relays	59686-7 Gr. 2

(*Continued on following page*)

GENERAL RAILWAY SIGNAL COMPANY April 1951

Supplies

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
	Kits, include plugboard, two relay mounting guide rods, terminals, insulators, current test terminal and mounting bolts.	
14	Blank Plugboard, for B2 relays	56022–21

Section E, Part 36

Type VTB Relays

General Railway Signal Company
Printed in U. S. A.

Memoranda

Type VTB Polar Biased Relay

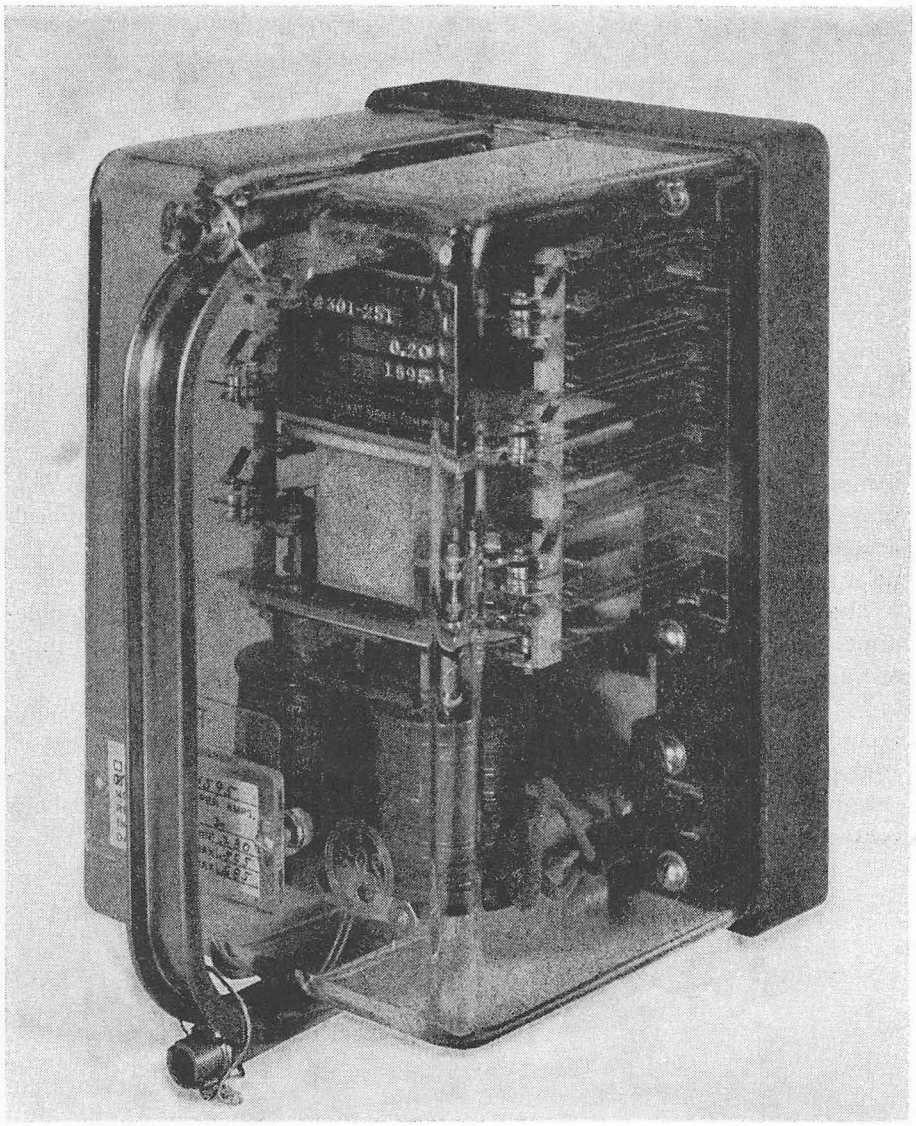
Foreword

THIS biased relay is for use where quick response is essential, such as in coded track circuits, and coded line circuits for signal control.

The VTB relay can be equipped with one or two armatures. Each armature is supported at the center by a spring which acts as a trunnionless bearing. This support spring can also provide spring bias. In the double-armature relay, each armature is biased in an opposite direction. A permanent magnet provides the polar feature.

The single-armature relay uses two coils connected in series. Double-armature relays may be similarly connected, or each coil may be wired to be energized independently, thus providing independent control.

Type VTB relays are quick-detachable. They mount on a plugboard and occupy the space of a Type B Size 2 relay. The single-armature relay can be equipped with a maximum of 4 dependent front-back contacts. The double-armature relay can be equipped with a maximum of 6 dependent front-back contacts, three per armature.



Height—7 11/16"
Width—4 15/16"
Depth—6 7/16"

Type VTB Relay

January 1956 GENERAL RAILWAY SIGNAL COMPANY

Type VTB Relay

NOTE: This relay may be furnished in any one of several contact combinations as listed below. If relay with other contact combination is required, kindly consult our nearest district office.

Contacts are silver-platinum to silver-platinum front and back.

For details see Plate E3609.

Order by plate, figure number and name

SINGLE ARMATURE

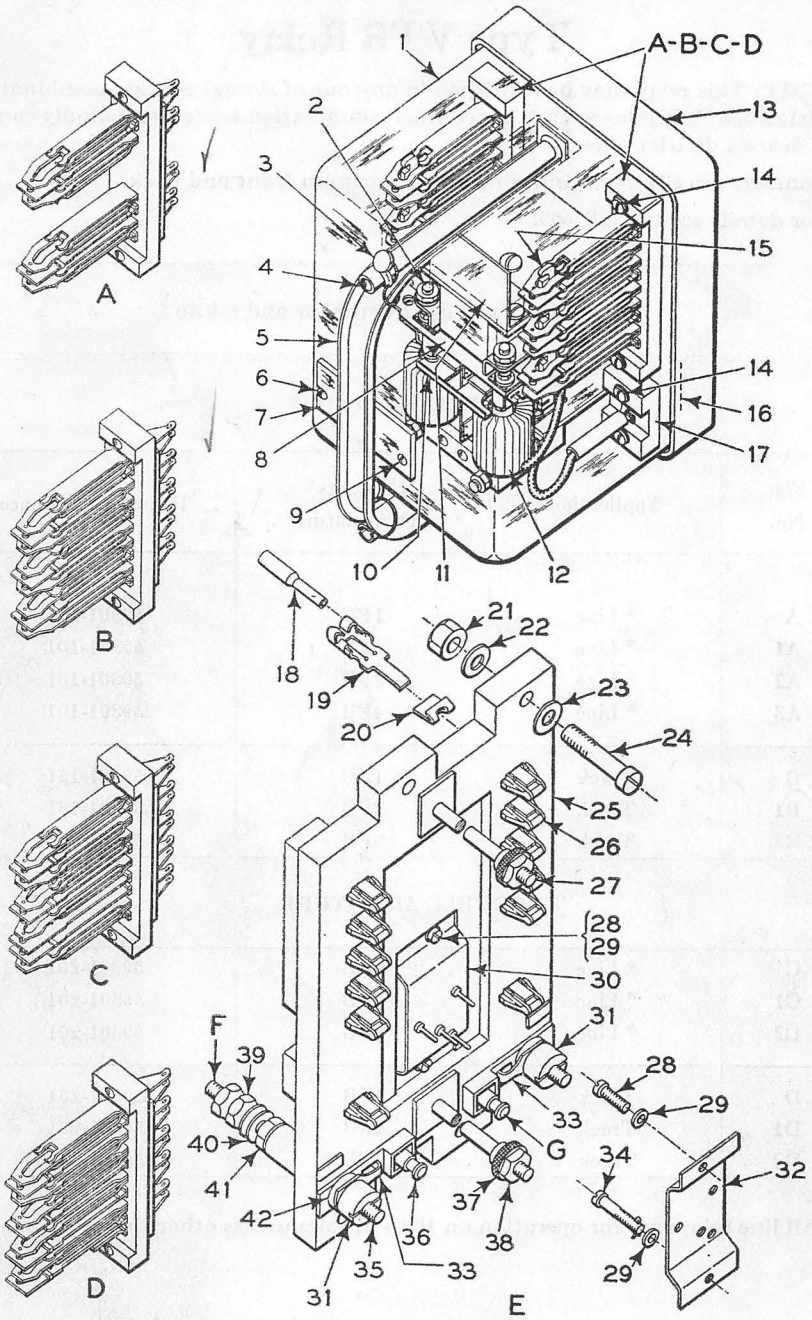
Fig. No.	Application	Contacts Per Armature	Drawing Reference
A	* Line	1FB	59301-101
A1	* Line	2FB	59301-101
A2	* Line	3FB	59301-101
A3	* Line	4FB	59301-101
B	Track	1FB	59301-151
B1	Track	2FB	59301-151
B2	Track	3FB	59301-151

DOUBLE ARMATURE

C	* Line	1FB	59301-201
C1	* Line	2FB	59301-201
C2	* Line	3FB	59301-201
D	Track	1FB	59301-251
D1	Track	2FB	59301-251
D2	Track	3FB	59301-251

***All line relays are for operation on 10 to 12 volts unless otherwise specified.**

PLATE E3609



Type VTB Relay
Detail Parts

Type VTB Relay

Detail Parts

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Contact Group Complete, two dependent front and back silver contacts	56012-65 Gr. 1
A1	as above, except tungsten	56012-82 Gr. 1
B	Contact Group Complete, three dependent front and back silver contacts	56012-66 Gr. 1
B1	as above, except tungsten	
C	Contact Group Complete, one dependent front back, two dependent fronts and one dependent back silver contacts	56012-64 Gr. 1
C1	as above, except tungsten	
D	Contact Group Complete, one dependent front back and three dependent front silver contacts	56012-84 Gr. 1
D1	as above, except tungsten	
E	Plugboard Complete **Includes the following:** 1–Twelve insulators and clips, Figs. 26 and 20 2–Two mounting studs for relay, Fig. 27 **Does not include the following which must be ordered separately if required.** 1–Registration plates, Figs. 30 and 32. 2–Mounting bolts, nuts and washers, Figs. 21 to 24. 3–Voltage and current test posts, Figs. F and G. 4–Terminals and sleeves, Figs. 19 and 18	59686-12 Gr. 1
F	Current Test Post Complete, includes 1-31, 1-33, 1-35, 2-39, 3-40, 1-41 and 1-42	42788-2 Gr. 1
G	Voltage Test Post Complete, includes 1-36, 2-39, 3-40 and 1-41	42788-2 Gr. 2
1	Cover, for relay	56029-31
2	Screw, No. 8-32, hex. crown hd., with hex. nut and lock washer, stop for armature	7499-2 3891-1 53029-2
3	Seal, for relay	35285
4	Tube, for fastening relay to plugboard	29474-47
5	Handle, for relay	41909-22

(Continued on following page)

Type VTB Relay

Detail Parts

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
6	Screw, No. 4-40 x 1/4" rd. hd., for fastening holder to cover	56190-4
7	Holder, for test data form	50023-17
7a	Test Data Form	51553-73
8	Armature Complete, double	18472-1 Gr. 1
8a	as above, except single armature	18472 Gr. 1
9	Screw, No. 4-40 x 5/16" rd. hd., for fastening holder to cover	56190-7
10	Pressure Spring, for coils	13108-30
11	Name Plate	401-309
12	Coil. **Order must specify drawing number and group number of relay for which coil is required.**	
13	Base, for relay	56023-34
14	Screw No. 8-32 x 3/4" rd. hd., with hex. nut and lock washer, for mounting contact blocks	2553-19 3891-1 53029-21
15	Pusher, with two clips, for contact groups, has slot in back edge for left-hand contact group on double armature relays	55863-53 56025-1
15a	as above, except has slot in front edge, for single armature relays and for left-hand contact group on double armature relays	55863-52 56025-1
16	Gasket, for cover	13014-312
17	Contact Group, for coil connections	56012-60 Gr. 1
18	Sleeve, moulded rubber, used with No. 10 wire on plugboard	35189-33
19	Terminal, only, two required per insulator	55871-19
20	Clip, for locking insulator in plugboard	38043-37
21	Nut, 1/4"-28 hex., for screw Fig. 24	1472-11
22	Lock Washer, for nut Fig. 21	0510-5
23	Washer, for screw Fig. 24	19680-2
24	Screw, 1/4"-28 x 1 1/4" fil. hd., for mounting plugboard, four required per plugboard	55470-22
25	Plugboard, with twelve insulator clips and insulators Figs. 20 and 26	59686-13 Gr. 1
26	Insulator, for plugboard	55862-88

(Continued on following page)

Type VTB Relay

Detail Parts

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
27	Stud, ¼″-28, with washer and lock nut, for plugboard	48813-7 50587-2 42333-14
28	Screw, No. 8-32 x ⅜″ fil. hd., for fastening plates to relay and plugboard	28989-3
29	Lock Washer, for screws Figs. 28 and 34	53029-4
30	Registration Plate, with pins, for plugboard. **Specify drawing number and group number of relay for which plate is required**	58876-2 Gr. 1
31	Nut, No. 14-24 round, for current test posts	578-15
32	Registration Plate, for relay. **Specify drawing number and group number of relay for which plate is required**	58875-6
33	Connector, for current test posts	4906-150
34	Screw, No. 8-32 x ⅞″ fil. hd., with cotter, for fastening plate Fig. 32 to relay	28989-46 51026-5
35	Screw, No. 14-24, used as current test post	374-10
36	Screw, No. 14-24, used as voltage test post	376-13
37	Nut, Knurled ¼″-28, for fastening relay to plugboard	846-29
38	Nut, ¼″-28 x ⅛″ hex., for locking nut Fig. 37	1472-8
39	Nut, No. 14-24 x 5/16″ hex., for test posts	42843-1
40	Washer, for test posts	1225-2
41	Nut, No. 14-24 x 3/16″ hex., for test posts	42839-5
42	Insulating Bushing, for connectors	6347-31

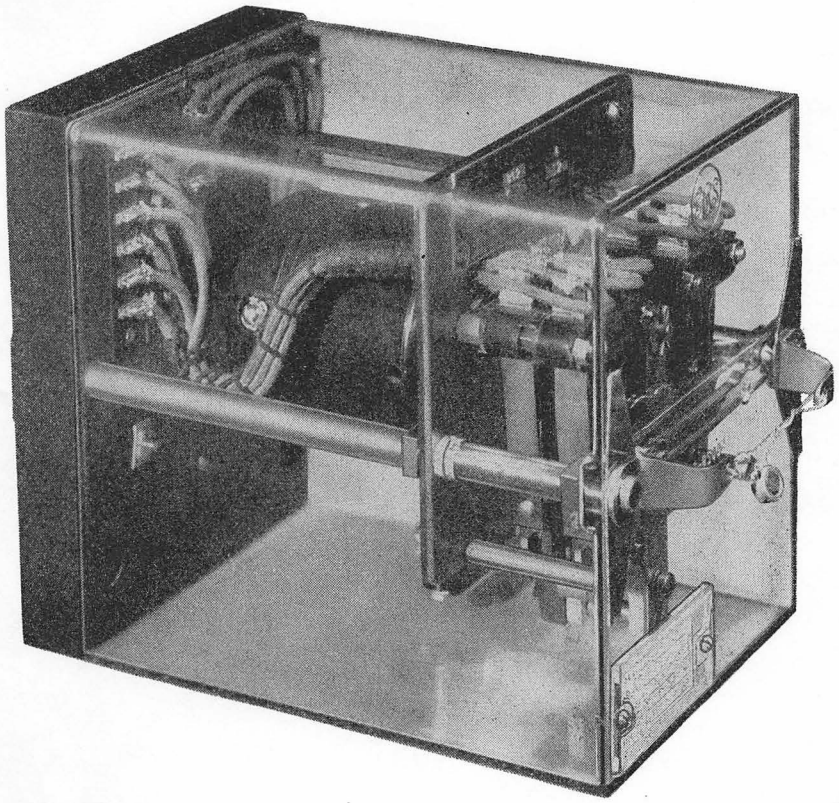
Memoranda

Section E, Part 35

Type B Direct-Current Flasher Relays

General Railway Signal Company
Printed in U.S.A.

PLATE E3501



Height—$6\frac{5}{16}$″
Width—$4\frac{15}{16}$″
Depth—$8\frac{9}{16}$″

Type B, Size 2, Flasher Relay
Motor-Operated

April 1951 GENERAL RAILWAY SIGNAL COMPANY

Type B, Size 2, Flasher Relay

Motor-Operated

NOTE: If relay with other operating characteristics is required, kindly consult our nearest district office.

Contacts are platinum-silver to platinum-silver front and back.

Biasing contact is silver to silver.

For additional information on these relays refer to Handbook 33, Section VII.

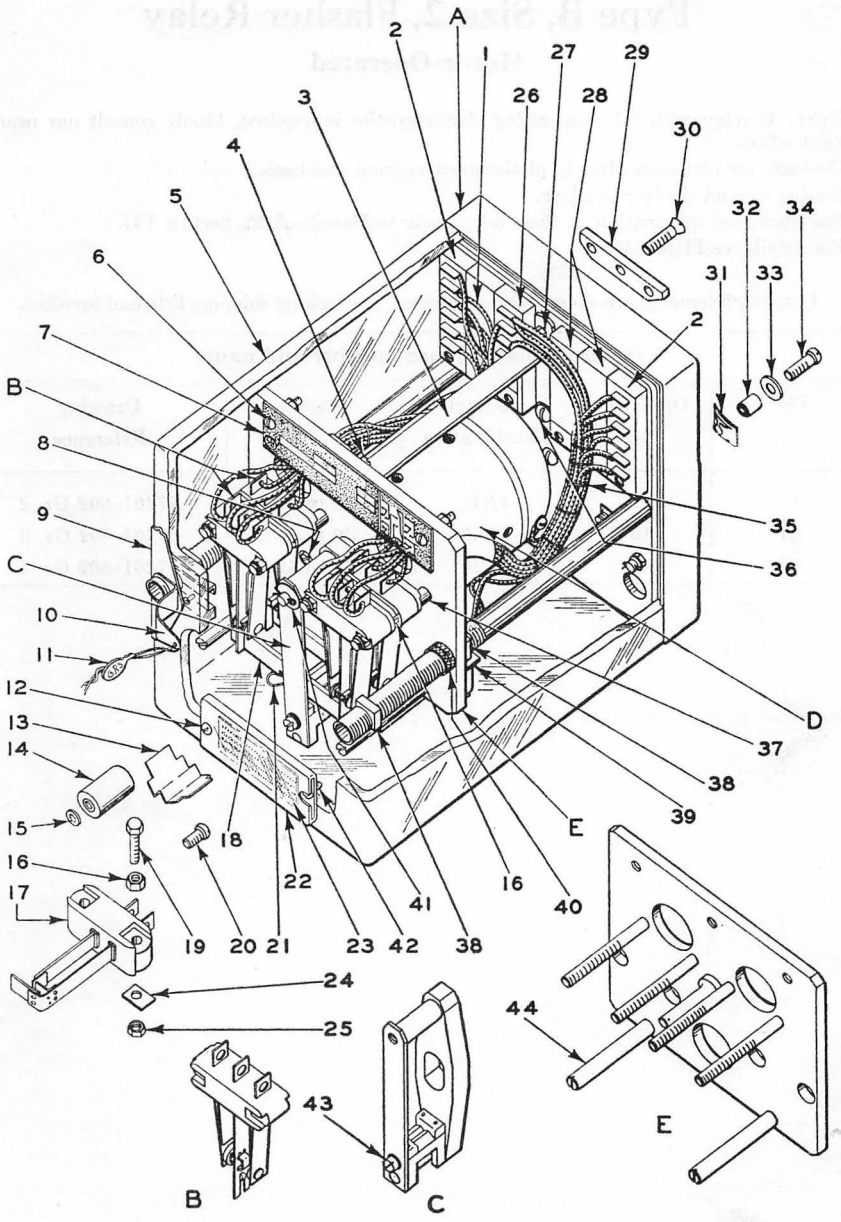
For details see Plate E3511.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Operating Volts	Contact Combination	Flashes Per Minute	Drawing Reference
A	8	4NR	39 to 42	57261–802 Gr. 2
A1	10	4NR	39 to 42	57261–802 Gr. 3
A2	12	4NR	39 to 42	57261–802 Gr. 4

PLATE E3511



Type B, Size 2, Flasher Relay
Motor-Operated

April 1951 GENERAL RAILWAY SIGNAL COMPANY

Type B, Size 2, Flasher Relay

Motor-Operated

NOTE: For registration parts and gasketing see Plate E3171.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Base Complete, for relay, includes tubes for studs	56013–8 Gr. 1
B	Contact Group Complete, for relay	57265–4 Gr. 1
C	Arm Complete, for relay	58646 Gr. 1
D	Motor Complete with gear train, for 8 volt operation	56018–161 Gr. 1
D1	as above, except for 10 volt operation	56018–161 Gr. 2
D2	same as Fig. D, except for 12 volt operation	56018–161 Gr. 3
E	Plate Complete, for relay	57273–2 Gr. 2
1	Lead Complete, left-hand, for relay	5075–60 Gr. 1
2	Contact Group, with three sets of terminals	56012–17 Gr. 1
3	Brace, for relay	57286–1
4	Screw, No. 8-32 x 1/4″ fil. hd., for fastening brace to plate Fig. E	28989–15
5	Cover Complete, for relay	57287–2 Gr. 1
6	Screw, No. 8-32 x 1/2″ rd. hd., for fastening name plate to plate Fig. E	2553–15 28948–1 53029–21
7	Name Plate, for relay	401–628
8	Screw, No. 6-32 x 7/16″ fil. hd., with lock washer, for mounting motor	3931–28 53029–26
9	Spring, flat, follow-up for nuts Fig. 10	16111–63
10	Nut, for sealing cover	56026–1
11	Seal, for relay	35285
12	Screw, No. 4-40 x 5/16″ rd. hd., for fastening holder to cover in position shown	56190–7
13	Spring, for toggle	16111–94
14	Roller, for operating arm	55117–3 Gr. 1
15	Washer, for end of roller	1225–136
16	Nut, No. 8-32 hex., for screw Fig. 19, also for contact groups	3891–4
17	Contact Complete, for relay	57265–5 Gr. 1
18	Pusher, for operating contacts	57269

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY April 1951

Type B, Size 2, Flasher Relay

Motor-Operated

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
19	Screw, No. 8-32 x 7/8" hex. hd., for mounting contact Fig. 17	29525-13
20	Screw, No. 8-32 x 1/4" rd. hd., for mounting bracket Fig. 39	2553-7
21	Spring Toggle, for contacts	16111-93
22	Holder, for test data form	50023-17
23	Form, for test data	51553-43
24	Lock Washer, for nut Fig. 25	1601-111
25	Nut, No. 8-32 hex., for screw Fig. 19	28948-1
26	Contact Group, with two sets of terminals	56012-44 Gr. 1
27	Screw, No. 8-32 x 1/2" fil. hd., with hex. nut and lock washer, for fastening brace Fig. 3 to base	28989-23 28948-1 53029-21
28	Cover Plate, for blank spaces	56012-1 Gr. 1
29	Plate, for holding contact blocks in place	35845-110
30	Screw, No. 6-40 x 5/8" fl. hd., for fastening plate Fig. 29 to base	369-2
31	Speed Nut, No. 8-32	57295
32	Bushing, for screws Fig. 34	6714-245
33	Washer, for screws Fig. 34	1225-13
34	Screw, No. 8-32 x 1/2" rd. hd., for base	2553-15
35	Lead Complete, right-hand, for relay	5075-62 Gr. 1
36	Screw, No. 10-32 x 5/16" rd. hd., with washer, for base	2438-10 53029-3
37	Spacer, for use between contact blocks and plate	49655-183
38	Nut, 3/8"-32 sq. for tubes	42835-11
39	Bracket, for supporting contact Fig. 17	34418-92
40	Spanner Nut, 3/8"-32 knurled, for tubes	846-28
41	Washer, for end of stud	5046-5
42	Screw, No. 4-40 x 1/4" rd. hd., for fastening holder to cover in position shown	56190-4
43	Screw, No. 10-32 x 1/4" fil. hd., with washer, for arm	12563-28 53029-3

(*Continued on following page*)

April 1951 GENERAL RAILWAY SIGNAL COMPANY

Type B, Size 2, Flasher Relay

Motor-Operated

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
44	Stud, No. 10-32 shouldered, with hex. nut and lock washer, for plate	441–476 40796 53029–7

Memoranda

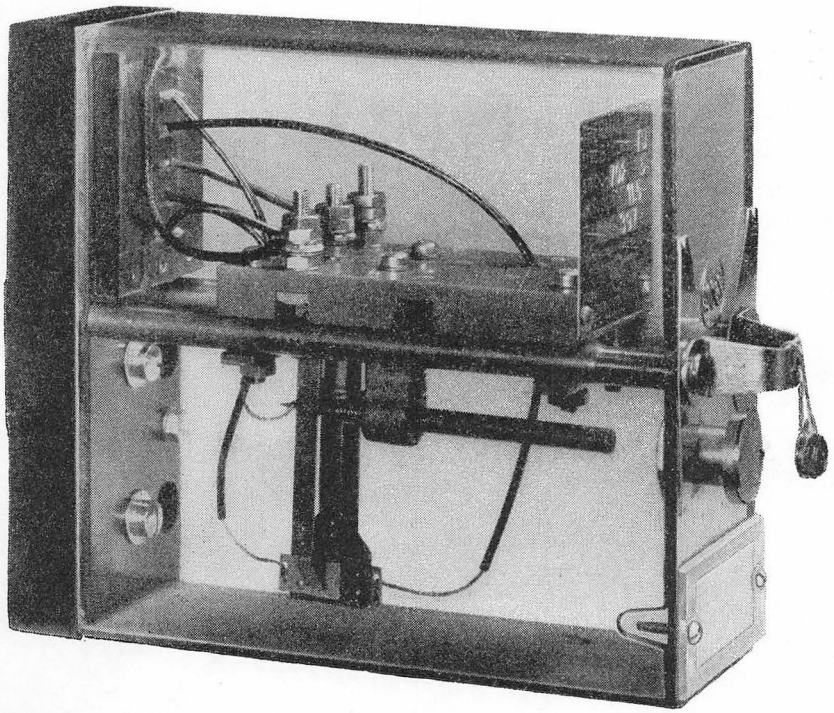
Section E, Part 34

Type B
Timing Relays

Supersedes Section E, Part 34 dated April 1946

General Railway Signal Company
Printed in U.S.A.

PLATE E3403



Height—$6\frac{5}{16}$″
Width—$2\frac{7}{16}$″
Depth—$8\frac{9}{16}$″

Type B, Size 1, Thermal Relay

April 1951 GENERAL RAILWAY SIGNAL COMPANY

Type B, Size 1, Thermal Relays

NOTE: If relay with other operating characteristics is required, kindly consult our nearest district office.

Contacts are silver to silver.

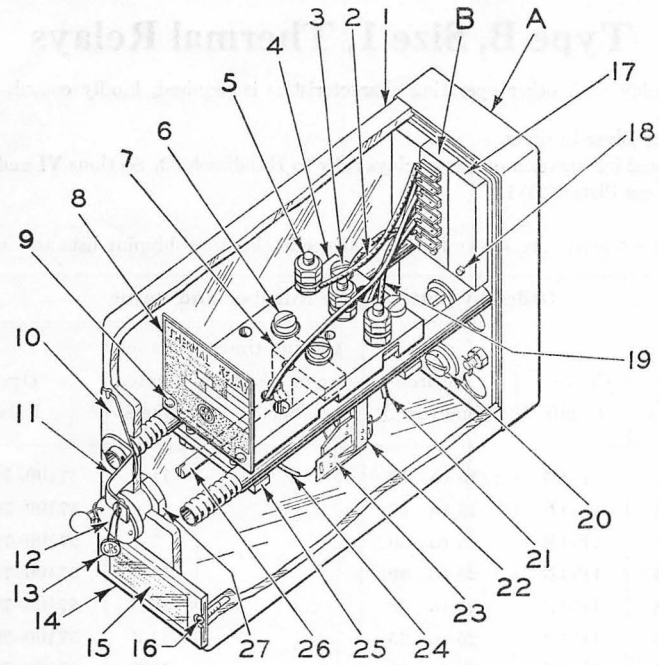
For additional information on these relays refer to Handbook 33, Sections VI and IX.

For details see Plate E3411.

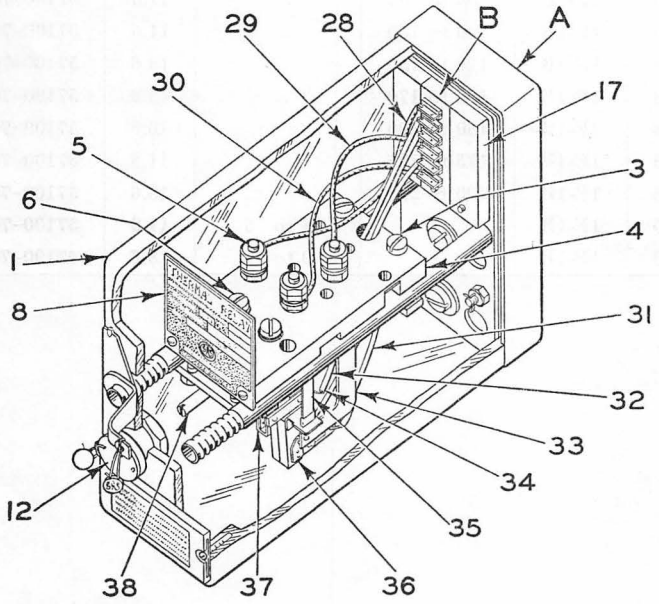
Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Oper. Volts	Contact Comb.	Entire Time (Sec.)	Closing time of open Contact (Sec.)	Res. of Heater Ohms	Drawing Reference
A	11.5	1F-1B	15 to 17		11.3	57100–702 Gr. 8
A1	13.8	1F-1B	15 to 17		18.6	57100–702 Gr. 2
A2	8.8	1F-1B	25 to 30		7.6	57100–702 Gr. 4
A3	11.5	1F-1B	25 to 30		11.3	57100–702 Gr. 3
A4	13.8	1F-1B	25 to 30		18.6	57100–702 Gr. 9
A5	11.5	1F-1B	25 to 35		11.3	57100–702 Gr. 6
A6	11.5	1F-1B	30 to 35		11.3	57100–702 Gr. 5
A7	13.8	1F-1B	55 to 65		18.6	57100–701 Gr. 6
A8	11.5	1F-1B	55 to 65		11.3	57100–701 Gr. 4
A9	11.5	1F-1B	90 to 100		11.5	57100–701 Gr. 3
A10	13.8	1F-1B	120 to 130		18.6	57100–701 Gr. 5
A11	13.8	1F-1B	150 to 170		18.6	57100–701 Gr. 2
A12	13.8	1F-1B	180 to 200		18.6	57100–701 Gr. 8
A13	11.5	1F-1B	175 to 185		11.3	57100–701 Gr. 7
A14	13.8	1F-1B	200 to 220		18.6	57100–701 Gr. 1
A15	11.5	1F-1B		4 to 6	11.3	57100–702 Gr. 7
A16	13.8	1F-1B		9 to 11	18.6	57100–702 Gr. 10



Type B, Size 1, Thermal Relay (TJ)



Type B, Size 1, Thermal Relay (TG)

April 1951 GENERAL RAILWAY SIGNAL COMPANY

Type B, Size 1, Thermal Relay
Classes TJ and TG

NOTE: For registration parts and gasketing see Plate E3171.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Base Complete, for relay, includes tubes for studs. **When ordering base, order must specify drawing number of relay for which base is required.**	
B	Contact Group, for relay	56012–17 Gr. 1
1	Cover, for relay	56029–8
2	Connector, 3⅜″ long, for Class TJ relay	42760–97 Gr. 2
3	Screw, No. 10-32 x 1¼″ fil. hd., with hex. nut and lock washer, for mounting block Fig. 4	12563–26 40796 53029–3
4	Block, for relay	57106
5	Screw, No. 10-32 x 1″ sq. hd., with hex. nuts and washers, for fastening contact fingers to block	351–18 40796 5046–5
6	Screw, No. 10-32 x ¾″ fil. hd., with lock washer, for fastening bracket Fig. 7 to block	12563–5 53029–3
7	Bracket, for adjusting screw	57105
8	Name Plate, for relay	401–263
9	Drive Screw, No. 4 x ¼″, for name plate	54392–1
10	Spring, flat, follow-up for nut Fig. 11	16111–63
11	Nut, for holding and sealing cover Fig. 1 in place	56026–1
12	Cover Complete, entrance for adjusting relay	57101 Gr. 1
13	Seal, for relay	35285
14	Holder, for test data form	50023–17
15	Test Data Form, for relay	51553–40
16	Screw, No. 4-40 x ⅜″ rd. hd., for holder Fig. 14	56190–3
17	Contact Group, blank	56012–1 Gr. 1
18	Screw, No. 6-40 x ½″ fl. hd., for mounting contact blocks	369–1
19	Connector, 4¼″ long, for Class TJ relay	42760–97 Gr. 3

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY April 1951

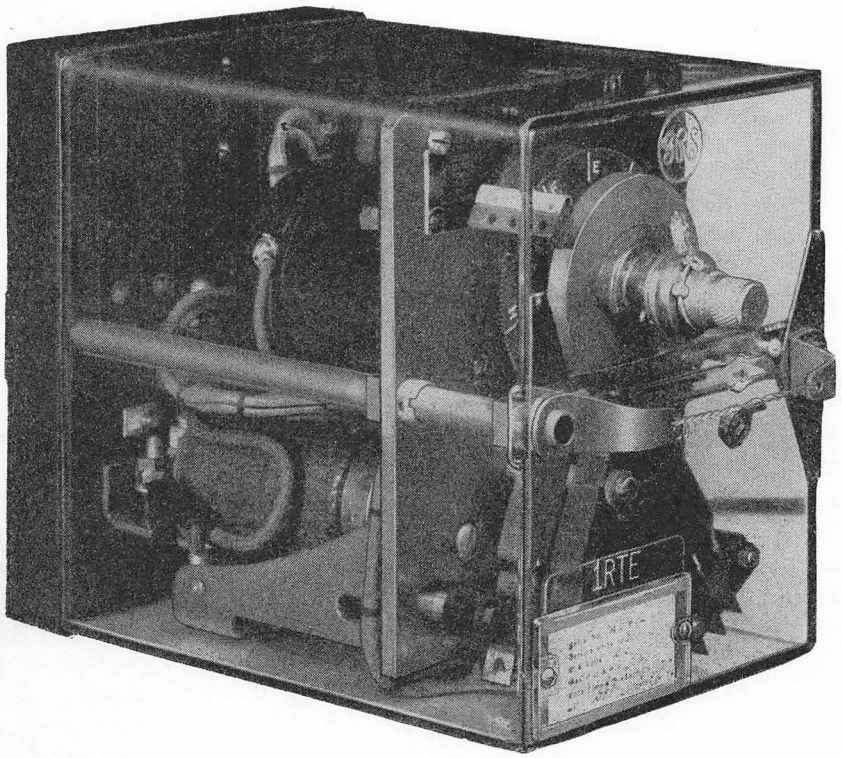
Type B, Size 1, Thermal Relay
Classes TJ and TG

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
20	Screw, No. 14-24 x ½″ fil. hd., with hex. nuts and washers, for base	49863–1 46986–2 1225–2
21	Spaghetti, black, 1MM, x 5⅛″ long, for wires	
21a	as above, except 2⅞″ long	
22	Finger Complete, right hand, as shown for Class TJ relay	51336–26 Gr. 1
22a	as above, except left hand	51336–24 Gr. 1
23	Finger Complete, center, for 8 volt operation, for Class TJ relay	51336–25 Gr. 3
23a	as above, except for 10 volt operation	51336–25 Gr. 2
23b	same as Fig. 23, except for 12 volt operation	51336–25 Gr. 1
24	Spaghetti, black, 1MM x 7¾″ long, for wires	
25	Strap, for block Fig. 4	51432–58
26	Adjusting Screw, for Class TJ relay	57104–1
27	Nut, ½″-32 hex., for cover Fig. 12	6358–5
28	Connector Complete, 5¾″ long, for Class TG relay	42760–97 Gr. 6
29	Connector Complete, 3¾″ long, for Class TG relay	42760–97 Gr. 4
30	Connector Complete, 4¾″ long, for Class TG relay	42760–97 Gr. 5
31	Spaghetti, black, 1MM x 5″ long, for wires	
32	Spaghetti, black, 1MM x 4″ long, for wires	
33	Contact Complete, right hand, for Class TG relay	13061–58 Gr. 1
34	Spaghetti, black, 1MM x 5½″ long, for wires	
35	Finger Complete, center, for Class TG relay	51336–9 Gr. 1
36	Finger Complete, for 8 volt operation, for Class TG relay	51336–22 Gr. 3
36a	as above, except for 10 volt operation	51336–22 Gr. 2
36b	same as Fig. 36, except for 12 volt operation	51336–22 Gr. 1
37	Contact Complete, left hand, for Class TG relay	13061–57 Gr. 1
38	Adjusting Screw, for Class TG relay	57104

Memoranda

PLATE E3421



Height—$6\frac{5}{16}$″
Width—$4\frac{15}{16}$″
Depth—$8\frac{9}{16}$″

Type B, Size 2, Timing Relay
Motor-Operated

April 1951 GENERAL RAILWAY SIGNAL COMPANY

Type B, Size 2, Timing Relays

Motor-Operated

NOTE: If relay with other operating characteristics is required, kindly consult our nearest district office.

Contacts are as follows:

Check contact—silver to silver
Motor contact—silver to silver
Timing contact—silver impregnated carbon

For additional information on these relays refer to Handbook 33, Section VI.
For details see Plate E3431.

Drawing references are shown for convenience in checking shipping lists and invoices.

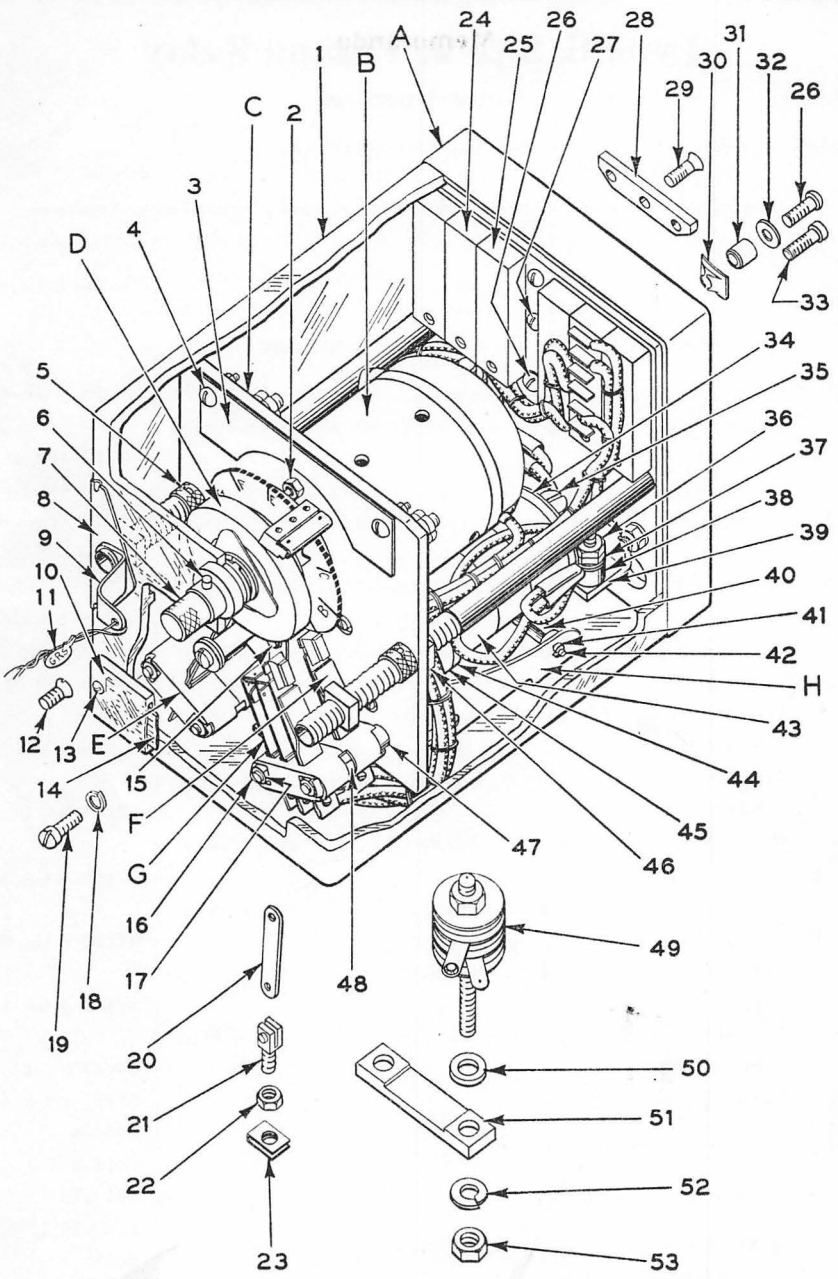
Order by plate, figure number and name

Fig. No.	Oper. Volts	Contact Comb.	Time Range		Time Setting	Timing Sealed	Drawing Reference
			Min.	Max.			
A	10	1F-1B	4 Sec.	64 Sec.	15 Sec.	Yes	57263–801 Gr. 5
A1	10	1F-1B	4 Sec.	64 Sec.	30 Sec.	Yes	57263–801 Gr. 8
A2	10	1F-1B	4 Sec.	64 Sec.	60 Sec.	Yes	57263–801 Gr. 9
A3	10	1F-1B	4 Sec.	64 Sec.	64 Sec.	No	57263–801 Gr. 3
A4	10	1F-1B	1 Min.	8 Min.	90 Sec.	Yes	57263–801 Gr. 10
A5	10	1F-1B	1 Min.	8 Min.	2 Min.	Yes	57263–801 Gr. 4
A6	10	1F-1B	1 Min.	8 Min.	3 Min.	Yes	57263–801 Gr. 6
A7	10	1F-1B	1 Min.	8 Min.	5 Min.	Yes	57263–801 Gr. 7
A8	10	1F-1B	1 Min.	8 Min.	8 Min.	Yes	57263–801 Gr. 18
A9	10	1F-1B	1 Min.	8 Min.	8 Min.	No	57263–801 Gr. 2
A10	10	1F-1B	2 Min.	16 Min.	16 Min.	No	57263–801 Gr. 11
B	12	1F-1B	4 Sec.	64 Sec.	10 Sec.	Yes	57263–802 Gr. 9
B1	12	1F-1B	4 Sec.	64 Sec.	15-17 Sec.	Yes	57263–802 Gr. 5
B2	12	1F-1B	4 Sec.	64 Sec.	64 Sec.	No	57263–802 Gr. 3
B3	12	1F-1B	1 Min.	8 Min.	2 Min.	Yes	57263–802 Gr. 4
B4	12	1F-1B	1 Min.	8 Min.	3 Min.	Yes	57263–802 Gr. 6
B5	12	1F-1B	1 Min.	8 Min.	4 Min.	Yes	57263–802 Gr. 8
B6	12	1F-1B	1 Min.	8 Min.	5 Min.	Yes	57263–802 Gr. 7
B7	12	1F-1B	1 Min.	8 Min.	8 Min.	No	57263–802 Gr. 2
B8	12	1F-1B	2 Min.	16 Min.	16 Min.	No	57263–802 Gr. 10

Memoranda

Memoranda

PLATE E3431



Type B, Size 2, Timing Relay
Motor-Operated

April 1951 GENERAL RAILWAY SIGNAL COMPANY

Type B, Size 2, Timing Relay

Motor-Operated

NOTE: For registration parts and gasketing see Plate E3171.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Base Complete, for relay, includes tubes for studs	56013–8 Gr. 1
B	Motor Complete, with gear train, for 10 volt operation, timing 4 to 64 seconds	56108–160 Gr. 4
B1	as above, except timing 1 to 8 minutes and 2 to 16 minutes	56108–160 Gr. 3
B2	same as Fig. B, except for 12 volt operation, timing 4 to 64 seconds	56108–160 Gr. 6
B3	same as Fig. B, except for 12 volt operation, timing 1 to 8 minutes	56108–160 Gr. 5
B4	same as Fig. B, except for 12 volt operation, timing 2 to 16 minutes	56108–160 Gr. 8
C	Plate Complete, for details and order references see Plate E3441, Fig. E	57273 Gr. 1
D	Timer Complete, for details and order references see Plate E3441, Fig. A	57289 Gr. 1
E	Contact Group Complete, for details and order references see Plate E3441 Fig. B	57265–3 Gr. 1
F	Contact Group Complete, for details and order references see Plate E3441, Fig. D	57265–2 Gr. 2
G	Contact Group Complete, for details and order references see Plate E3441 Fig. C	57265–1 Gr. 2
H	Armature Complete, for details and order references see Plate E3441, Fig. G	57280 Gr. 1
1	Cover Complete, for relay	57287–2 Gr. 4
2	Screw, No. 6-40, with hex. nut	1054–6 3614–7
3	Name Plate, for relay	401–283
4	Screw, No. 8-32 x ½″ rd. hd., with hex. nut and lock washer, for mounting name plate	2553–15 28948–1 53029–21

(*Continued on following page*)

PLATE E3431

GENERAL RAILWAY SIGNAL COMPANY April 1951

Type B, Size 2, Timing Relay

Motor-Operated

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
5	Spanner Nut, 3/8″-32 knurled, for tubes	846–28
6	Sealing Pin, for relay	492–5
7	Adjusting Knob, for relay	49843–10
8	Spring, flat, follow-up for nuts Fig. 9	16111–63
9	Nut, for sealing cover	56026–1
10	Holder, for test data form	50023–19
11	Car Seal, for relay	35285
12	Screw, No. 8-32 x 5/16″ csk. hd., for mounting timer	35042–12
13	Screw, No. 4-40 x 5/16″ rd. hd., for fastening holder to cover	56190–7
13a	as above, except 1/4″ long	56190–4
14	Test Data Form, for relay	51553–44
15	Split Pin, for link	42146–10
16	Lock Washer, bent-up, for nut on contact group	1601–111
17	Nut, No. 8-32 hex., for studs supporting contacts	28948–1
18	Lock Washer, for screw Fig. 19	53029–26
19	Screw, No. 6-32 x 7/16″ fil. hd., for mounting motor	3931–28
20	Link, for armature	37367–5
21	Stud, for armature	57292
22	Nut, No. 10-32 hex., for stud	47344–1
23	Lock Washer, for nut Fig. 22	1601–41
24	Contact Block, for relay	56012–17 Gr. 1
25	Contact Group, blank	56012–1 Gr. 1
26	Screw, No. 10-32 x 5/16″ rd. hd., with lock washer, for base	2438–10 53029–3
27	Screw, No. 8-32 x 1/2″ rd. hd., for base	2553–15
28	Plate, for contact blocks	35845–110
29	Screw, No. 6-40 x 5/8″ fl. hd., for plate	369–2
30	Speed Nut, No. 8-32, for screw Fig. 26	57295
31	Bushing, for screw Fig. 26	6714–245
32	Washer, for screw Fig. 26	1225–13

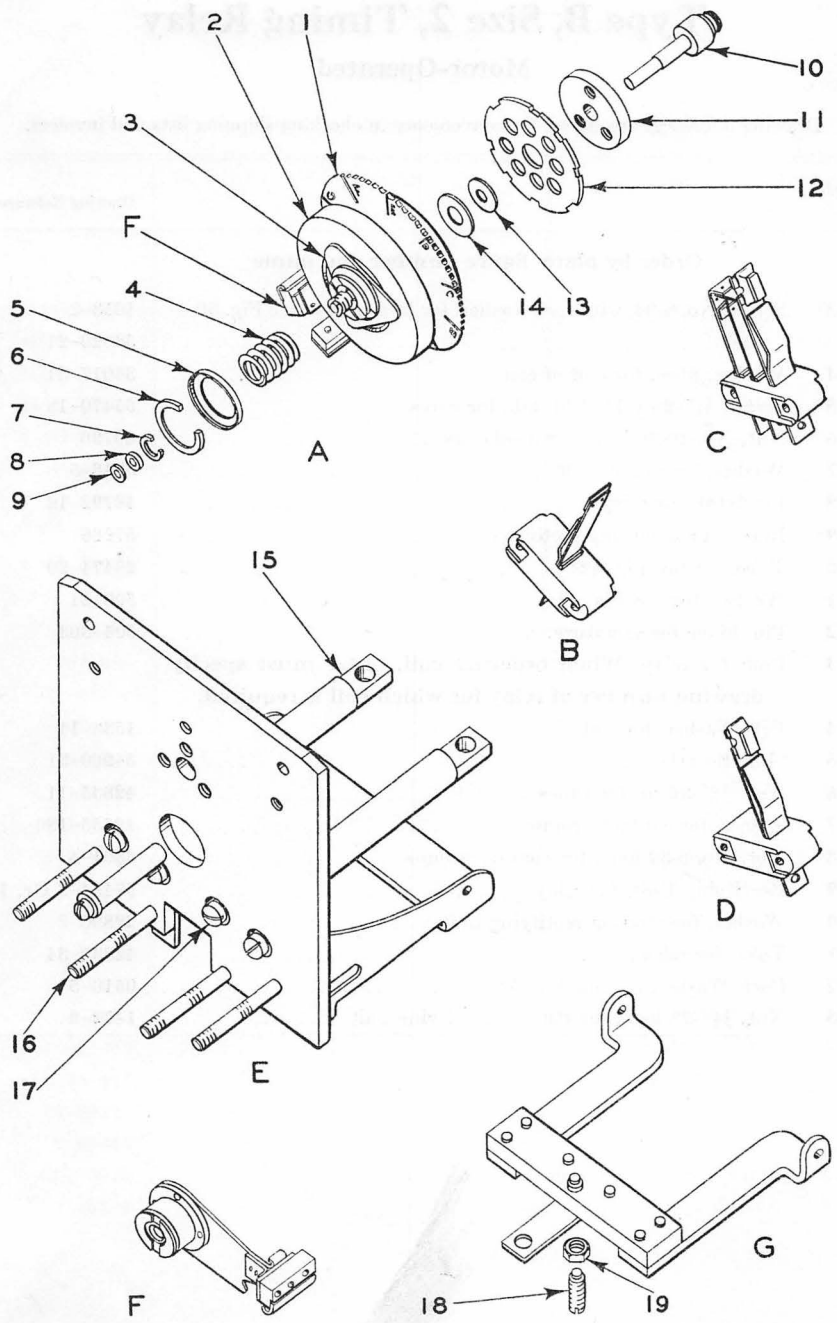
(Continued on following page)

Type B, Size 2, Timing Relay

Motor-Operated

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
33	Screw, No. 8-32, with lock washer, for fastening brace Fig. 39 to base	1053–2 53029–21
34	Washer, fibre, for end of coil	34017–31
35	Screw, ¼″-28 x 1½″ fil. hd., for cores	55470–18
36	Nut, No. 10-32 hex., for insulators	40796
37	Washer, for nut Fig. 36	5046–5
38	Insulator, for relay	42792–12
39	Brace, for mounting rectifier	57286
40	Tube, for pin Fig. 42	29474–29
41	Washer, for pin Fig. 42	590–21
42	Pin, hinge for armature	504–363
43	Coil, for relay. **When ordering coil, order must specify drawing number of relay for which coil is required.**	
44	Felt Washer, for coil	1533–14
45	Slug, for relay	54960–31
46	Nut, ⅜″-32 sq. for tubes	42835–11
47	Spacer, for contact groups	49655–180
48	Nut, No. 8-32 hex., for contact groups	3891–4
49	Rectifying Unit, for relay	57434–3 Gr. 1
50	Washer, for stud on rectifying unit	22890–2
51	Yoke, for relay	42836–34
52	Lock Washer, for nut Fig. 53	0510–5
53	Nut, ¼″-28 hex., for stud on rectifying unit	1472–9



Type B, Size 2, Timing Relay
Detail Parts

Type B, Size 2, Timing Relay

Detail Parts

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Timer Complete, for Type B, Size 2 Timing Relay	57289 Gr. 1
B	Contact Complete, as shown	57265–3 Gr. 1
C	Contact Complete, as shown	57265–1 Gr. 2
D	Contact Complete, as shown	57265–2 Gr. 2
E	Plate Complete, with cores	57273 Gr. 1
F	Adjuster Complete, for timer	57290 Gr. 1
G	Armature Complete, for Type B, Size 2 Timing Relay	57280 Gr. 1
1	Gear Complete, for timer, includes gear, hub, contact, ring, cup all riveted together	57293 Gr. 1
2	Flywheel, for timer	57279
3	Spring washer, for flywheel	36177–4
4	Spring, for timer	586–139
5	Cup Washer, for washer Fig. 6	22539–13
6	Washer, for hub	590–78
7	Washer, for hub	590–79
8	Washer, for use behind shim, Fig. 9	47847–1
9	Shim Washer, .005″ thick, for end of shaft	1225–154
9a	as above, except .010″ thick	1225–155
10	Shaft, for timer	47544–49
11	Washer, for mounting timer	57281
12	Disc, for timer	34829–1
13	Washer, for gear	3890–6
14	Washer, for gear	5046–8
15	Core, for relay	29514–114
16	Stud, No. 8-32, for supporting contacts	879–59
17	Screw, No. 10-32 x ½″ fil. hd., with lock washer, for fastening cores to bracket	12280–37 53029–3
18	Screw, No. 10-32 headless, for armature	5100–39
19	Nut, No. 10-32 hex., for screw Fig. 18	47344–1

Memoranda

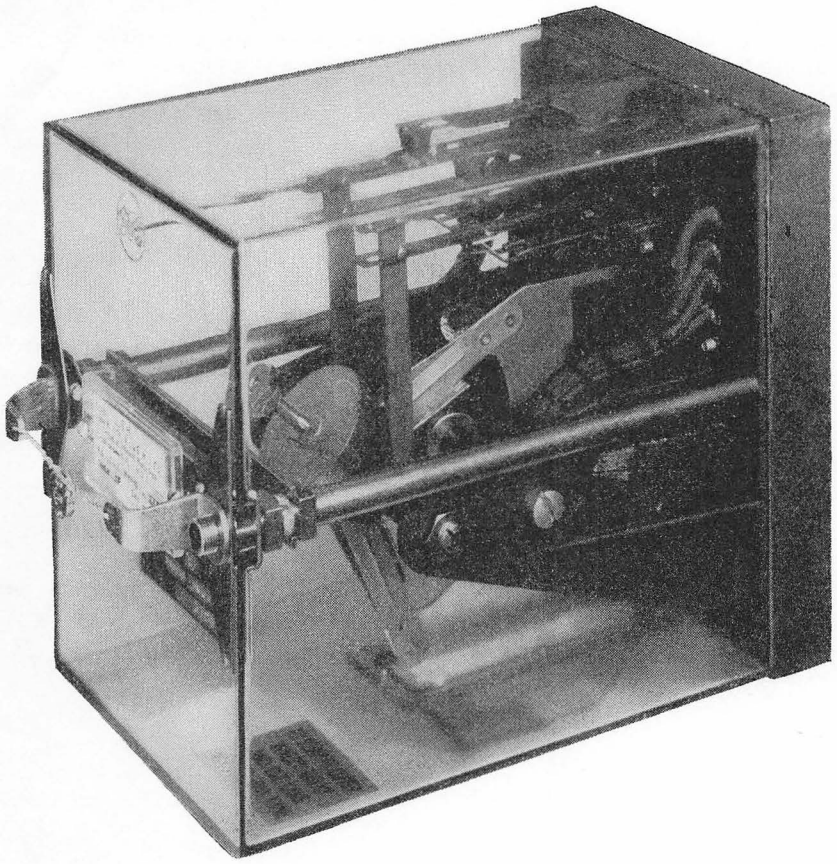
Section E, Part 33

Type B
Vane Relays

Supersedes Section E, Part 33 dated April 1946

General Railway Signal Company
Printed in U.S.A.

PLATE E3303



Height—$6\frac{5}{16}$″
Width—$4\frac{15}{16}$″
Depth—$8\frac{9}{16}$″

Type B, Size 2, A-c. Vane Relay
Two-Position

April 1951 GENERAL RAILWAY SIGNAL COMPANY

Type B, Size 2, A-c. Vane Relays Two-Position

NOTE: If relay with other contact combination, local or track windings is required, kindly consult our nearest district office.

Contacts are silver-impregnated carbon to silver front and silver to silver back.

For additional information on these relays refer to Handbook 33, Section VIII.

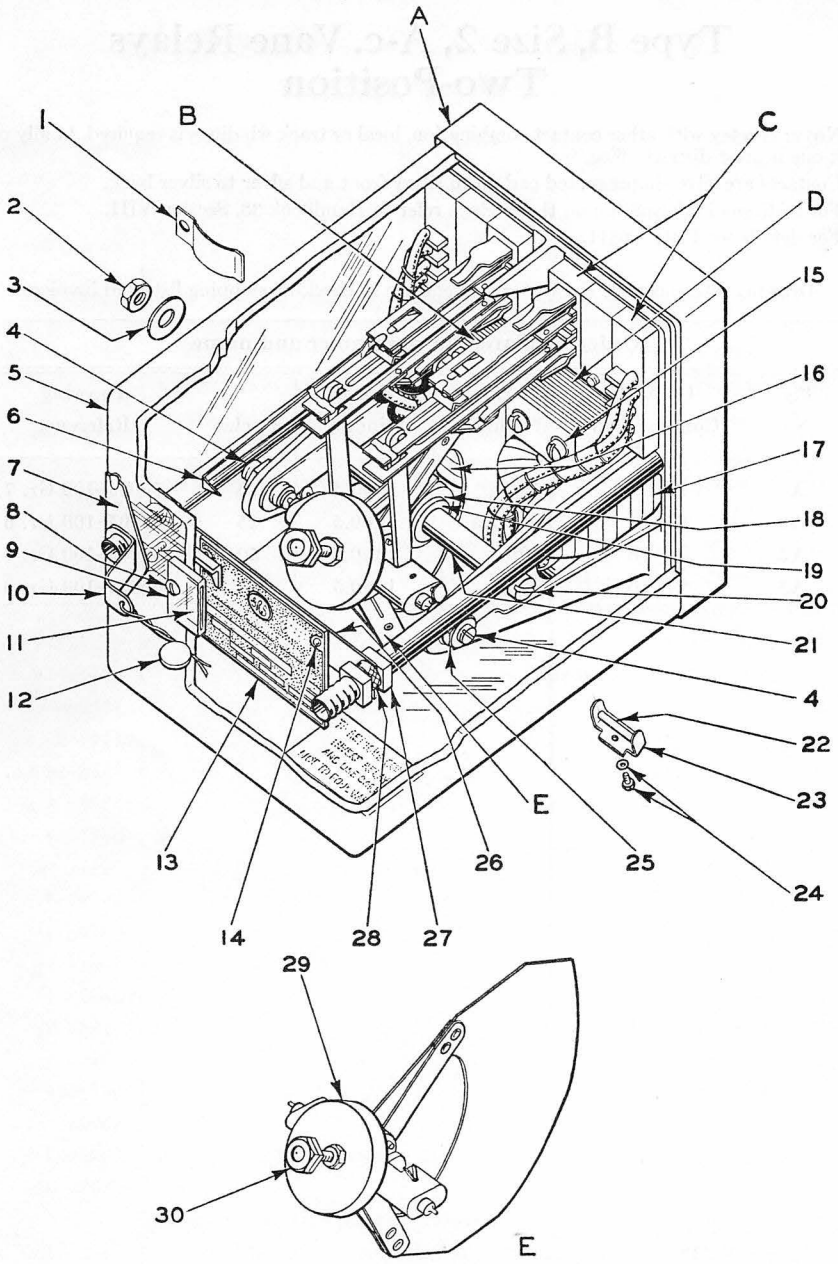
For details see Plate E3311.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Contact Combination	Local Winding	Track Winding	Cycles	Drawing Reference
A	2F	110/55	1.0/0.5	60	56005–100 Gr. 7
A1	2F	55/27.5	1.0/0.5	25	56005–100 Gr. 6
A2	2F-2B	110/55	1.0/0.5	50	56005–100 Gr. 8
A3	2F-2B	110/55	1.0/0.5	60	56005–100 Gr. 9

PLATE E3311



Type B, Size 2, A-c. Vane Relay
Two-Position

Type B, Size 2, A-c. Vane Relay Two Position

NOTE: For registration parts and gasketing see Plate E3171.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Base Complete, for relay	56013–14 Gr. 1
B	Magnet Complete local. **When ordering magnet, order must specify drawing number of relay for which magnet is required.**	
C	Contact Group Complete, for details and order references see Plate E3145.	
D	Magnet Complete, track. **When ordering magnet, order must specify drawing number of relay for which magnet is required.**	
E	Vane Complete, for relay	51507–13 Gr. 2
1	Spring, to hold coils tight on magnets	16111–16
2	Nut, ¼″-28 hex., for screws Fig. 20	1472–8
3	Shim Washer, for nut Fig. 2	1148–5
4	Bearing Complete, for vane shaft	51527–1 Gr. 2
5	Cover Complete, for relay	57287–2 Gr. 8
6	Indicator Complete, for relay	56141–2 Gr. 1
7	Spring, flat, follow up for nut Fig. 10	16111-33
8	Screw, No. 4-40 x 5/16″ rd. hd., for fastening holder to cover	56190–7
8a	as above, except ¼″ lg	56190–4
9	Holder, for test data form	50023–17
10	Nut, ⅜″-32, for sealing cover	56026–1
11	Test Data Form, for relay	51553–36
12	Seal, for relay	35285
13	Name Plate, for relay	401–636
14	Escutcheon Pin, for name plate	40797
15	Screw, No. 8-32 x 1½″ fil. hd., with lock washer, for fastening magnets to base	28989–9 53029–21
16	Coil, only, for local magnet. **When ordering coil, order must specify drawing number of relay for which coil is required.**	

(*Continued on following page*)

GENERAL RAILWAY SIGNAL COMPANY April 1951

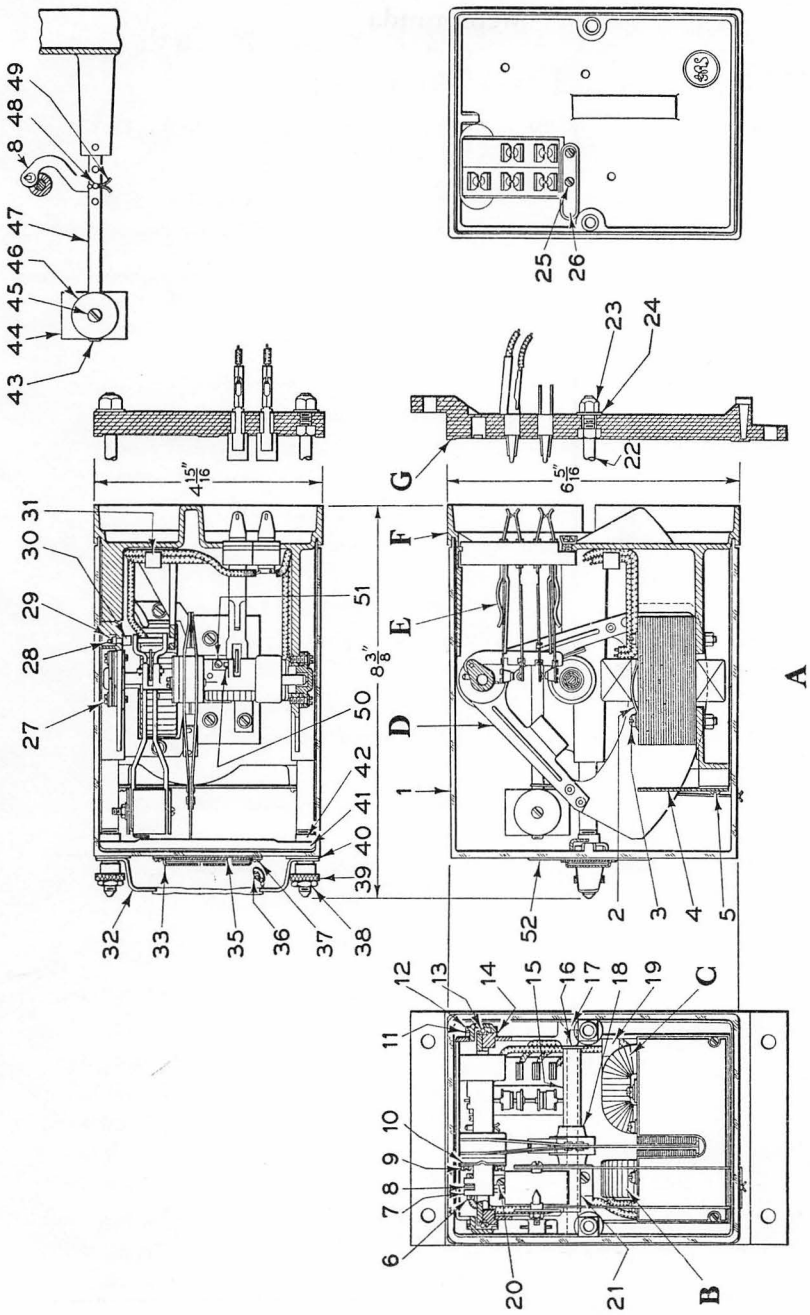
Type B, Size 2, A-c. Vane Relay Two Position

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
17	Coil, only, for track magnet. **When ordering coil, order must specify drawing number of relay for which coil is required.**	
18	Stop, resilient, for vane	56563–3
19	Washer, for spacer Fig. 19a	1148–6
19a	Spacer, for stop Fig. 18	49655–215
20	Screw, 1/4″-28 x 4 1/8″ fil. hd., for supporting stop Fig. 18	55470–19
21	Spacer, for stop Fig. 18	49655–214
22	Pin, 3/4″ long, for operating pushers	504–388
23	Clip, for holding pins in position	18547–80
24	Screw, No. 2-56 x 1/4″ fil. hd., with lock washer, for clips	55221–5 53029–34
25	Nut, 5/16″-32 hex., for bearings	12578–2
26	Bracket, for supporting name plate	49092–107
27	Nut, 3/8″-32 sq. for tubes	42835–11
28	Spanner Nut, 3/8″-32 knurled, for tubes	846–28
29	Counterweight, for vane	39823–3
30	Nut, No. 10-32 hex., for stud	577–2

Memoranda

PLATE E3319



Type B, Size 2, A-c. Vane Relays
Two Position
For Repair Parts Only

April 1951 GENERAL RAILWAY SIGNAL COMPANY

Type B, Size 2, A-c. Vane Relays Two Position

Note: This plate is included for ordering repair parts for relays of earlier design

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Type B2 Vane Relay Complete, two position. **When ordering a replacement relay, order must specify ordering reference of relay found on the name plate** (for example 56005–50 Gr. 1)	56005
B	Magnet Complete, local. **When ordering magnet, order must specify drawing number of relay for which magnet is required.**	
C	Magnet Complete, line or track. **When ordering magnet, order must specify drawing number of relay for which magnet is required.**	
D	Vane Complete, for relay. **When ordering vane, order must specify drawing number of relay for which vane is required.**	
E	Contact Group, for relay. For details and order references see Plate E3145	56012
F	Base Complete, for relay. **When ordering base, order must specify drawing number of relay for which base is required.**	
G	Plugboard. For details and order references see Plate E3135.	
1	Cover Complete, with bar and screws, for relay	57287–2 Gr. 3
2	Spring, to hold coils tight on magnet	16111–16
3	Screw, No. 8-32 x 1¾″ fil. hd., with hex. nut and lock washers, for mounting magnets Figs. B and C	55160–31 7256–1 53029–21
4	Name Plate, for relay	401–239
5	Screw, No. 4-40 x 5/16″ rd. hd., for name plate	55226–7
6	Bearing, knife-edge, for counterweight link Fig. 8	56562
7	Crank, for counterweight	56566–2
8	Link, for counterweight	40452–30

(*Continued on following page*)

GENERAL RAILWAY SIGNAL COMPANY April 1951

Type B, Size 2, A-c. Vane Relays Two Position

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
9	Screw, 1/8″-56 x 3/4″ hex. hd., with lock washer, for washer Fig. 10	368–1 53029–27
10	Lock Washer, for locking counterweight crank in position	1225–119
11	Shim, .005″ th., for use between bearing Fig. 14 and cap Fig. 12, for adjusting end play of vane shaft	53879
11a	as above, except .003″ th.	53879–1
12	Cap, for bearing Fig. 14	53828
13	Ball, thrust, for end of vane shaft	36126–4
14	Bearing, knife-edge, for vane	53828–1
15	Spacer, right hand, for positioning vane stop Fig. 18	49655–156
16	Shim Washer, .010″ th., for spacer Fig. 15	1148–4
17	Screw, 1/4″-28 x 4 1/2″ fl. hd., for supporting stop Fig. 18	55561–4
18	Stop, resilient, for vane	56563
19	Clip, for holding four wires	15795–27
20	Screw, No. 6-32 x 1/4″ fil. hd., for fastening clips Figs. 19 and 31 to base	55159–3
21	Spacer, left hand, for positioning vane stop Fig. 18	49655–155
22	Stud Complete, 1/4″-28, with nuts and washer, for holding relays to plugboard	43106–3 Gr. 1 42333–14 846–29 1472–8 1225–2
23	Nut, 1/4″-28, elastic stop, for holding stud Fig. 22	42333–14
24	Washer, for nut Fig. 23	1225–2
25	Screw, No. 6-40 x 7/16″ fil. hd., for mounting contact blocks	55560–11
26	Cup, for sealing screws Fig. 25	56267–1
27	Screw, No. 8-32, collar hd., for fastening knife-edge bearing to base	53829–6
28	Cotter Pin, 1/16″ x 5/8″ for holding pin Fig. 29 in place	0799–1
29	Pin, bearing, for counterweight link	1118–15
30	Spacer, for holding counterweight arm in position on pin Fig. 29.	49655–157

(*Continued on following page*)

Type B, Size 2, A-c. Vane Relays Two Position

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
31	Clip, for holding two wires	15795–24
32	Nut, for holding and sealing cover Fig. 1 in place	56026–1
33	Holder, for test data form	50023–17
35	Form, for test data	51553–36
36	Seal, for relay	35285
37	Screw, No. 4-40 x ¼″ rd. hd., for holder Fig. 33	56190–4
37a	as above, except $\frac{5}{16}$″ long	56190–7
38	Nut, ¼″-28 x ⅛″ th., hex., for locking nut Fig. 39	1472–8
39	Knurled Nut, ¼″-28, for holding relay to plugboard	846–29
40	Spring, follow-up for nut Fig. 32	16111–63
41	Bar, for cover	56668
42	Nut, ⅜″-32 x $\frac{3}{16}$″ th., sq., for holding bar Fig. 41	42835–11
43	Indicator, for relay	56142–2
44	Counterweight, for vane. **When ordering counterweight, order must specify drawing number of relay for which counterweight is required.**	
45	Screw, No. 6-32 x 1¼″ rd. hd., with hex. nut and lock washer, for counterweight Fig. 44	2613–26 50314–2 53029–26
46	Washer, for counterweight	1225–132
47	Counterweight Lever Complete, includes riveted parts	56559 Gr. 1
48	Bearing Pin, for link Fig. 8	1118–11
49	Cotter Pin, $\frac{1}{32}$″ x ½″, for pin Fig. 48	51026–4
50	Pin, bearing for pusher that operates contact fingers	504–331
51	Screw, No. 4–40 x ¼″ fil. hd., with washer and lock washer, for pin Fig. 50	55227–5 1601–95 53029–27
52	Tag, blank, circuit designation of relay	15311–5

Memoranda

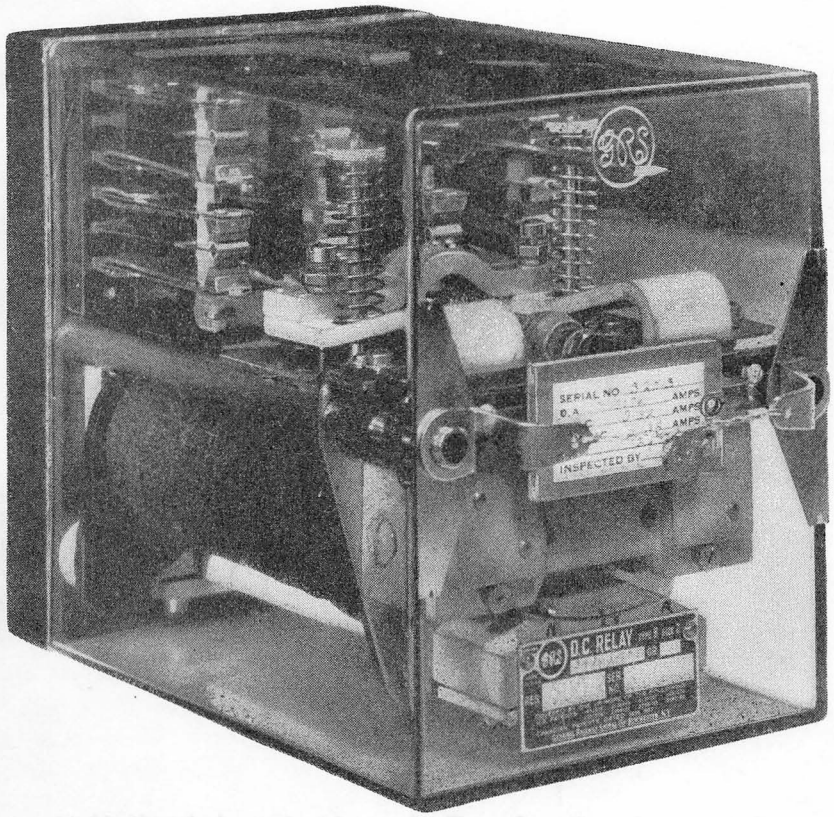
Section E, Part 32

Type B Direct-Current Polarized and Retained-Neutral Polarized Relays

Supersedes Section E, Part 32 dated April 1946

General Railway Signal Company
Printed in U.S.A.

PLATE E3203



Height—$6\frac{5}{16}$″
Width—$4\frac{15}{16}$″
Depth—$8\frac{9}{16}$″

Type B, Size 2, Direct-Current Polarized Relay

Type B, Size 2, Direct-Current

Regular Releasing Polarized Relay

NOTE: This relay may be furnished in any one of several contact combinations as listed below.

If relay with other contact combination or resistance is required, kindly consult our nearest district office.

All relays have a .050″ front contact opening except those otherwise indicated.

Neutral contacts are regular duty silver-impregnated carbon to silver front and silver to silver back, unless otherwise indicated.

Polarized contacts are silver-impregnated carbon to silver.

For additional information on Type B Polarized relays refer to Handbook 33, Section V.

For details see Plate E3211.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Contact Combination		Res. Ohms	Drawing Reference
	Neutral	Polar		
A	2FB-1F-2B and 2F (EHD)	4NR	***200-200	56003–785 Gr. 6
B	2FB-2F	4NR	*125-.14	56003–785 Gr. 8
B1	2FB-2F	4NR	*300-.14	56003–785 Gr. 1
C	2FB-3F-3B	4NR	180-200	56003–785 Gr. 5
D	3F-3B	6NR	276	56003–706 Gr. 26
E	4FB-3F	4NR	200	56003–703 Gr. 2
E1	4FB-3F	4NR	590	56003–703 Gr. 1
F	4FB	4NR	34	56003–701 Gr. 7
F1	4FB	4NR	100	56003–701 Gr. 6
F2	4FB	4NR	200	56003–701 Gr. 3
F3	4FB	4NR	330	56003–701 Gr. 5
F4	4FB	4NR	500	56003–701 Gr. 2
F5	4FB	4NR	590	56003–701 Gr. 1
F6	4FB	4NR	850	56003–701 Gr. 4
F7	4FB	4NR	50-425	56003–705 Gr. 1
F8	4FB	4NR	180-200	56003–785 Gr. 4
F9	4FB	4NR	**200-200	56003–785 Gr. 10
G	4FB	8NR	200	56003–707 Gr. 3
G1	4FB	8NR	500	56003–707 Gr. 2
G2	4FB	8NR	590	56003–707 Gr. 1
H	6FB	6NR	200	56003–704 Gr. 1

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY April 1951

Type B, Size 2, Direct-Current

Regular Releasing Polarized Relay

Drawing references are shown for convenience in checking shipping lists and invoices.

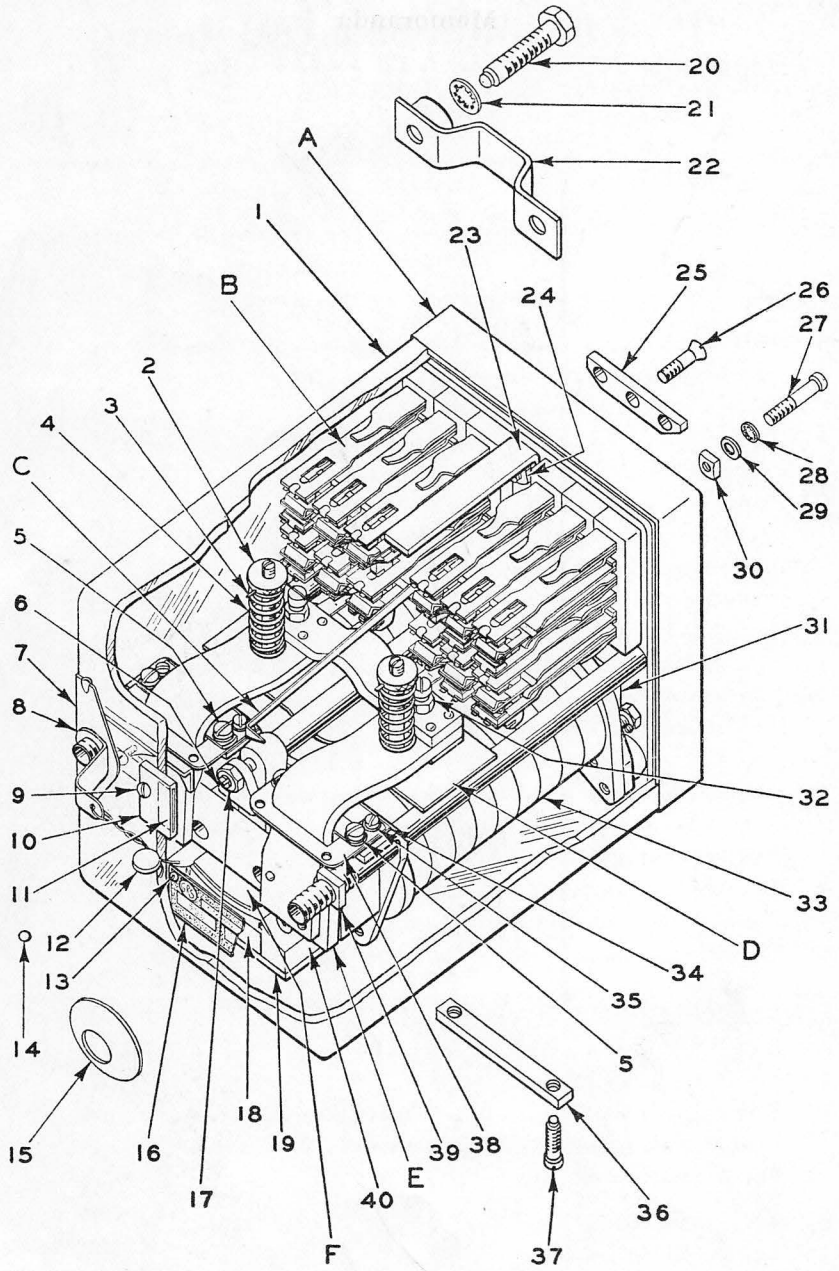
Order by plate, figure number and name

Fig. No.	Contact Combination		Res. Ohms	Drawing Reference
	Neutral	Polar		
H1	6FB	6NR	330	56003–704 Gr. 3
H2	6FB	6NR	500	56003–704 Gr. 2
J	8FB	4NR	200	56003–710 Gr. 1
J1	8FB	4NR	330	56003–710 Gr. 3
J2	8FB	4NR	500	56003–710 Gr. 2
J3	8FB	4NR	165-165	56003–785 Gr. 3
J4	8FB	4NR	180	56003–713 Gr. 1
K	....	8NR	200	56003–785 Gr. 9

*Heavy duty silver contacts—neutral and polar
**.090″ front contact opening
***.125″ front contact opening
EHD—Extra heavy duty contacts—magnetic blowouts

Memoranda

PLATE E3211



Type B, Size 2, Polarized Relay

April 1951 GENERAL RAILWAY SIGNAL COMPANY

Type B, Size 2, Polarized Relay

NOTE: For registration parts and gasketing see Plate E3171.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Base Complete, for relay, includes tubes for studs. **When ordering base, order must specify drawing number of relay for which base is required.**	
B	Contact Group, for relay. For details and order references see Plate E3145	56012
C	Indicator Complete, for indicating position of contacts, includes clips for attaching to fingers. **When ordering indicator, order must specify drawing number of relay for which indicator is required**	56141
D	Cores and Brackets Complete, includes residual pins and studs for springs Fig. 4. **When ordering cores and brackets, order must specify drawing number of relay for which cores and brackets are required.**	
E	Armature Complete, neutral, includes top and bottom residual screws and riveted parts. **When ordering armature, order must specify drawing number of relay for which armature is required.**	
F	Polar Armature Complete, includes residual pins and all riveted parts. **When ordering armature, order must specify drawing number of relay for which armature is required.**	
1	Cover, for relay	57287–2 Gr. 1
2	Nut, No. 10-32 rd., knurled, for stud on bracket	846–23
3	Lock, for nut Fig. 2	56024
4	Spring, for setting back contacts. **When ordering spring, order must specify drawing number of relay for which spring is required.**	
5	Screw, No. 8-32 x $\frac{5}{16}$" fil. hd., with washers, for fastening armature plates to bracket	55160–26 22543–21 53029–21

(*Continued on following page*)

GENERAL RAILWAY SIGNAL COMPANY April 1951

Type B, Size 2, Polarized Relay

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
6	Bracket, for polar armature	49092–56
7	Spring, flat, follow-up for nut Fig. 8	16111–63
8	Nut, 3/8″-32, for holding and sealing cover	56026–1
9	Screw, No. 4-40 x 5/16″ rd. hd., for fastening holder to cover	56190–7
9a	as above, except 1/4″ long	56190–4
10	Holder, for test data form	50023–17
11	Form, for test data	51553–38
12	Seal, for relay	35285
13	Screw, No. 2-56 rd. hd., for mounting name plate	55219–3
14	Ball, 1/8″ dia., for screws Fig. 17	36126–4
15	Spring Washer, to keep coils tight	1225–105
16	Name Plate, for relay	401–194
17	Screw, No. 10-32, with hex. nut, trunnion for polar armature	3018–20 40796
18	Permanent magnet, for relay	54862–5
19	Strap, for permanent magnet	51432–49
20	Screw, 5/16″-24 x 1 1/8″ hex. hd., for fastening cores and yokes to relay base	3440–21
21	Lock Washer, for screw Fig. 20	53029–25
22	Yoke Complete, for relay	56268–1 Gr. 2
23	Brace, for cover Fig. 1	1482–24
24	Screw, No. 10-32 x 5/8″ fil. hd., with hex. nut and lock washer, for fastening brace to base	12563–3 40796 53029–3
25	Plate, for contact blocks	35845–110
26	Screw, No. 6-40 x 5/8″ fl. hd., for plate	369–2
27	Screw, No. 8-32 x 7/8″ fil. hd., for yoke	55160–29
28	Lock Washer, for screw Fig. 27	53029–21
29	Washer, for screw Fig. 27	2534–1
30	Nut, No. 8-32 sq., for screw Fig. 27	15250–2
31	Yoke, for relay	1224–10

(*Continued on following page*)

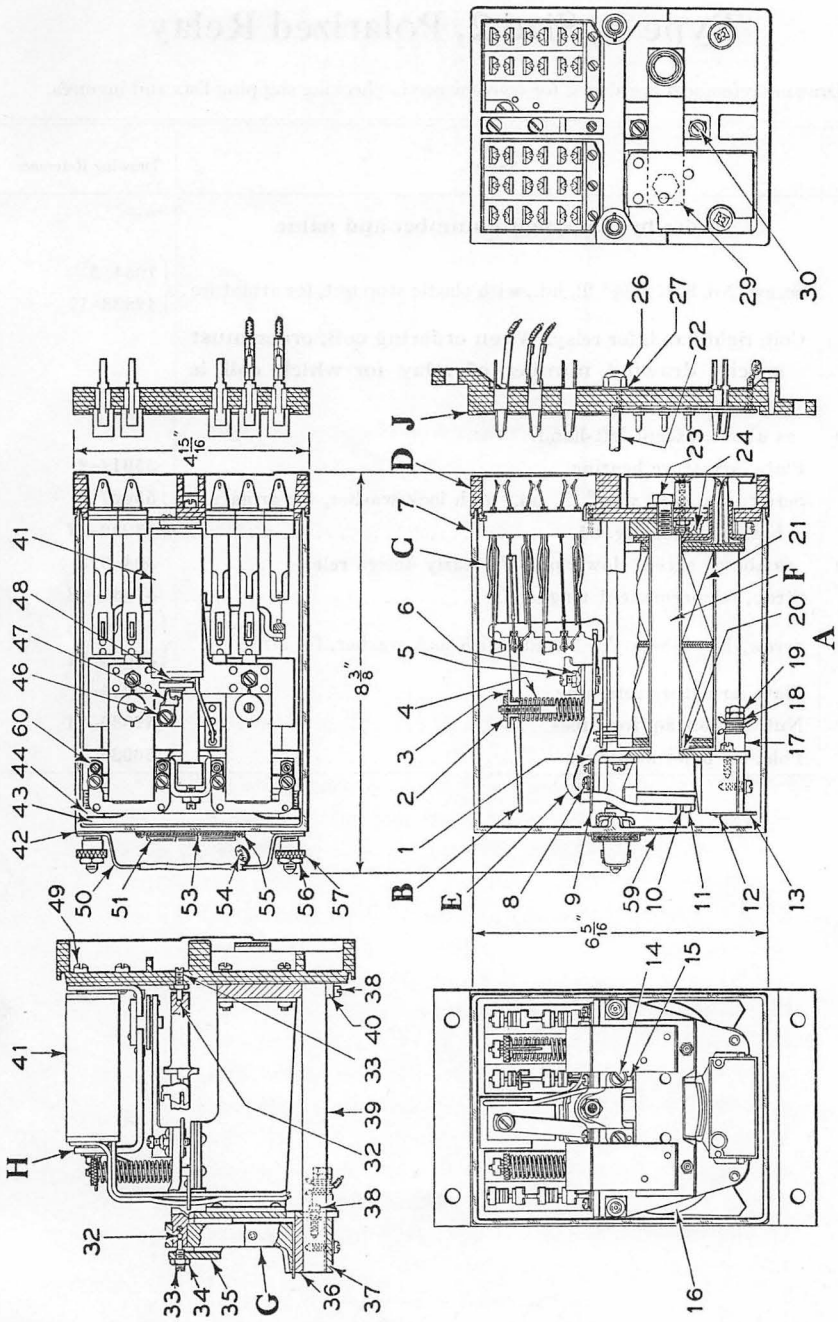
April 1951 GENERAL RAILWAY SIGNAL COMPANY

Type B, Size 2, Polarized Relay

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
32	Screw, No. 8-32 x 7/8" fil. hd., with elastic stop nut, for armature	1054–5 42333–17
33	Coil, right hand, for relay. **When ordering coil, order must specify drawing number of relay for which coil is required.**	
33a	as above, except left-hand.	
34	Plate, armature bearing	55912–2
35	Screw, No. 4-40 x 1/4" fil. hd., with lock washer, for armature bearing plate Fig. 34	55227–5 53029–27
35a	as above, except dowel pin. For early design relays	504–313
36	Strap, for permanent magnet	51432–48
37	Screw, No. 8-32 x 7/16" fil. hd., with lock washer, for strap	55160–28 53029–21
38	Plate, armature retaining	55914–2
39	Nut, 3/8"-32, sq. for tubes	42835–11
40	Pole, for polar armature	56035

PLATE E3251



Type B, Size 2, Retained-Neutral Polarized Relays For Repair Parts Only

April 1951 GENERAL RAILWAY SIGNAL COMPANY

Type B, Size 2, Retained-Neutral Polarized Relays

For Repair Parts Only

NOTE: For registration parts and gasketing see Plate E3171.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Type B2 Retained-Neutral Polarized Relay Complete. **When ordering a replacement relay, order must specify ordering reference of relay found on the name plate on relay armature** (for example 56004–50 Gr. 1)	56004
B	Indicator Complete, for indicating position of contacts, includes clips for attaching to fingers. **When ordering indicator, order must specify drawing number of relay for which indicator is required**	56141
C	Contact Group, for relay. For details and order references see Plate E3145	56012
D	Base Complete, for relay, includes tube for stud Fig. 22. **When ordering base, order must specify drawing number of relay for which base is required.**	
E	Neutral Armature Complete, for relay, includes top and bottom residual screws and riveted parts. **When ordering armature, order must specify drawing number of relay for which armature is required.**	
F	Cores and Brackets Complete, for relay, includes residual pins and studs for springs Fig. 4. **When ordering cores and brackets, order must specify drawing number of relay for which cores and brackets are required.**	
G	Polar Armature Complete, for relay, includes residual pins and all riveted parts. **When ordering armature, order must specify drawing number of relay for which armature is required.**	
H	Yoke Complete, for relay, includes core for coil, residual pins and all riveted parts. **When ordering yoke, order must specify drawing number of relay for which yoke is required.**	

(*Continued on following page*)

GENERAL RAILWAY SIGNAL COMPANY April 1951

Type B, Size 2, Retained-Neutral Polarized Relays

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
J	Plugboard. For details and order references see Plate E3135.	
1	Plate, armature bearing	55912–2
2	Nut, No. 10-32 rd., knurled, for stud on bracket	846–23
3	Lock, for nut Fig. 2	56024
4	Spring, for setting back contacts. **When ordering spring, order must specify drawing number of relay for which spring is required.**	
5	Screw, No. 8-32 x 7/8″ fil. hd., for armature	1054–5
6	Nut, No. 8-32 elastic stop, for screw Fig. 5	42333–17
7	Cover Complete, with bar and screws, for relay	57287–2 Gr. 1
8	Screw, No. 8-32 x 5/16″ fil. hd., with washer and lock washer, for fastening armature plates to bracket	55160–26 22543–21 53029–21
9	Plate, armature retaining	55914–2
10	Nut, No. 6-40 x 1/8″ th., hex., for screw Fig. 11	3614–3
11	Screw, residual, No. 6-40 x 3/8″ lg., for neutral armature	55968
12	Screw, No. 2-56 rd. hd., for fastening name plate to bracket	55219–3
13	Name Plate, for relay	401–194
14	Screw, No. 8-32 x 5/16″ fil. hd., with lock washer, for polar armature	55160–26 53029–21
15	Dowel Pin, for polar armature	504–304
16	Coil, left hand, for relay. **When ordering coil, order must specify drawing number of relay for which coil is required.**	
17	Insulator, for use when double or triple wound coils are used	42792–3
18	Washer, for nut Fig. 19	5046–5
19	Nut, No. 10-32 x 1/8″ th., hex., for insulator	577–12
20	Spring Washer, to hold coils tight on core	1225–105
21	Coil, right hand, for relay. **When ordering coil, order must specify drawing number of relay for which coil is required.**	

(*Continued on following page*)

Type B, Size 2, Retained-Neutral Polarized Relays

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
22	Stud Complete, ¼″-28, with nuts and washer, for holding relays to plugboard	43106-3 Gr. 1 42333-14 846-29 1472-8 1225-2
23	Screw, $\frac{5}{16}$″-24 x 1⅛″ hex. hd., with lock washer, for fastening cores and yokes to relay base	3440-21 53029-25
24	Yoke, for cores. **When ordering yoke, order must specify drawing number of relay for which yoke is required.**	
26	Nut, ¼″-28, elastic stop for holding stud Fig. 22	42333-14
27	Washer, for nut Fig. 26	1225-2
29	Yoke Complete, for relay. **When ordering yoke, order must specify drawing number of relay for which yoke is required.**	
30	Screw, No. 8-32 x ⅞″ fil. hd., with sq. nut, washer and lock washer, for yoke Fig. 29	55160-29 15250-2 2534-1 53029-21
32	Ball, ⅛″ dia., for screw Fig. 33	36126-4
33	Screw, No. 10-32, trunnion for polar armature	3018-20
34	Nut, No. 10-32 x ⅛″ th., hex., for screw Fig. 33	40796
35	Bracket, for polar armature	49092-56
36	Pole, for polar armature	56035
37	Strap, for polar armature	51432-49
38	Screw, No. 8-32 x $\frac{7}{16}$″ fil. hd., with lock washer, for fastening straps Fig. 37 and Fig. 40 to permanent magnet Fig. 39, also for fastening permanent magnet Fig. 39 to core and bracket Fig. F	55160-28 53029-21
39	Permanent Magnet, for relay. **When ordering magnet, order must specify drawing number of relay for which magnet is required.**	

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY April 1951

Type B, Size 2, Retained-Neutral Polarized Relays

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
40	Strap, for permanent magnet	51432–48
41	Coil, for R-N-P structure. **When ordering coil, order must specify drawing number of relay for which coil is required.**	
42	Spring, follow-up for nut Fig. 50	16111–63
43	Bar, for cover	56668
44	Nut, $\frac{3}{8}$″-32 x $\frac{3}{16}$″ th., sq., for bar Fig. 43	42835–11
46	Screw, No. 8-32 x $\frac{5}{16}$″ fil. hd., with washers and lock washers, for fastening brace Fig. 47 to cores and brackets	55160–26 2534–1 2534–2 53029–21
47	Brace, for yoke Fig. H	21648–1
48	Spring Washer, to hold R-N-P coil tight on core	1225–122
49	Screw, No. 10-32 x $\frac{7}{16}$″ fil. hd., for fastening yoke Fig. H to base	12563–24
50	Nut, for holding and sealing cover Fig. 7 in place	56026–1
51	Holder, for test data form	50023–17
53	Form, for test data	51553–50
54	Seal, for relay	35285
55	Screw, No. 4-40 x $\frac{1}{4}$″ rd. hd., for holder Fig. 51	56190–4
55a	as above, except $\frac{5}{16}$″ long	56190–7
56	Nut, $\frac{1}{4}$″-28 x $\frac{1}{8}$″ th., hex., for locking nut Fig. 57 in place	1472–8
57	Knurled Nut, $\frac{1}{4}$″-28, for fastening cover to relay	846–29
59	Tag, blank, for circuit designation of relay	15311–5
60	Screw, No. 4-40 x $\frac{1}{4}$″ fil. hd., with lock washer, for armature bearing plate Fig. 2	55227–5 53029–27
60a	as above, except dowel pin	504–313

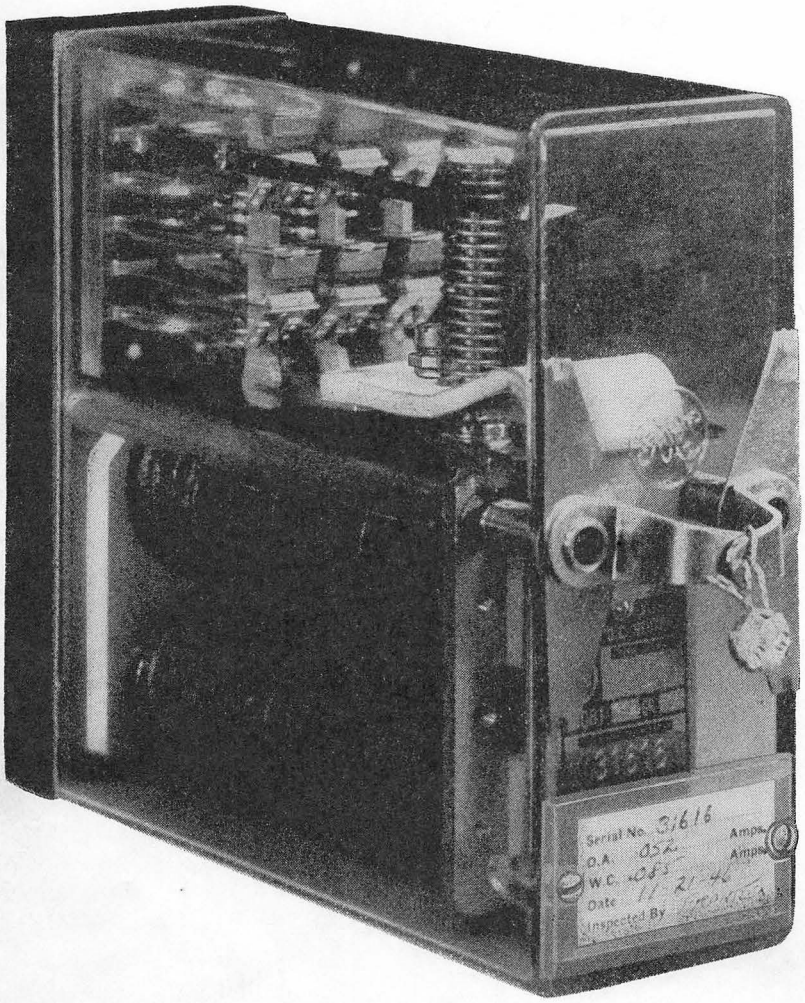
Section E, Part 31

Type B Direct-Current Neutral Relays

Supersedes Section E, Part 31 dated April 1946

General Railway Signal Company
Printed in U. S. A.

PLATE E3103



Height—$6\frac{5}{16}$″
Width—$2\frac{7}{16}$″
Depth—$8\frac{9}{16}$″

Type B, Size 1, Direct-Current Neutral Relay

Type B, Size 1, Direct-Current

Regular Releasing Neutral Relay

Line and Track

NOTE: This relay may be furnished in any one of several contact combinations as listed below.

If relay with other contact combination or resistance is required, kindly consult our nearest district office.

All relays have a .050″ front contact opening, except those otherwise indicated.

For additional information on Type B relays refer to Handbook 33.

For details see Plate E3121.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Contact Combination	Res. Ohms	Service		Drawing Reference
			Front Contact	Back Contact	
A	2FB	60	Reg.	Reg.	56001–813 Gr. 4
A1	2FB	100	Reg.	Reg.	56001–816 Gr. 4
A2	2FB	500	Reg.	Reg.	56001–813 Gr. 2
A3	2FB	900	Reg.	Reg.	56001–813 Gr. 1
A4	2FB	2240	Reg.	Reg.	56001–813 Gr. 3
B	4FB	60	HD-C	HD-C	56001–819 Gr. 3
B1	4FB	100	HD-C	HD-C	56001–819 Gr. 4
B2	4FB	500	HD-C	HD-C	56001–819 Gr. 1
B3	4FB	900	HD-C	HD-C	56001–819 Gr. 2
B4	4FB	500	**HD-C	HD-C	56001–785 Gr. 45
C	4FB	60	Reg.	Reg.	56001–827 Gr. 3
C1	4FB	100	Reg.	Reg.	56001–827 Gr. 4
C2	4FB	500	Reg.	Reg.	56001–827 Gr. 1
C3	4FB	900	Reg.	Reg.	56001–827 Gr. 2
D	4FB	500	HD-S	HD-S	56001–753 Gr. 2
D1	4FB	900	HD-S	HD-S	56001–753 Gr. 1
E	4FB	1.8	Reg.	Reg.	56001–788 Gr. 2
E1	4FB	4	Reg.	Reg.	56001–788 Gr. 1
F	6FB	4	Reg.	Reg.	56001–714 Gr. 1
F1	6FB	16	Reg.	Reg.	56001–714 Gr. 2
F2	6FB	60	Reg.	Reg.	56001–762 Gr. 4
F3	6FB	100	Reg.	Reg.	56001–762 Gr. 5
F4	6FB	200	Reg.	Reg.	56001–762 Gr. 6
F5	6FB	350	Reg.	Reg.	56001–762 Gr. 7

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY April 1951

Type B, Size 1, Direct-Current

Regular Releasing Neutral Relay

Line and Track

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Contact Combination	Res. Ohms	Service		Drawing Reference
			Front Contact	Back Contact	
F6	6FB	500	Reg.	Reg.	56001–762 Gr. 2
F7	6FB	900	Reg.	Reg.	56001–762 Gr. 1
F8	6FB	940	Reg.	Reg.	56001–845 Gr. 1
F9	6FB	1000	Reg.	Reg.	56001–762 Gr. 3
G	6FB	100	*Reg.	Reg.	56001–859 Gr. 5
G1	6FB	160	*Reg.	Reg.	56001–859 Gr. 7
G2	6FB	200	*Reg.	Reg.	56001–859 Gr. 4
G3	6FB	350	*Reg.	Reg.	56001–859 Gr. 6
G4	6FB	500	*Reg.	Reg.	56001–859 Gr. 2
G5	6FB	900	*Reg.	Reg.	56001–859 Gr. 1
G6	6FB	1000	*Reg.	Reg.	56001–859 Gr. 3
H	2FB-6F	100	Reg.	Reg.	56001–846 Gr. 5
H1	2FB-6F	160	Reg.	Reg.	56001–846 Gr. 7
H2	2FB-6F	200	Reg.	Reg.	56001–846 Gr. 4
H3	2FB-6F	350	Reg.	Reg.	56001–846 Gr. 6
H4	2FB-6F	500	Reg.	Reg.	56001–846 Gr. 2
H5	2FB-6F	900	Reg.	Reg.	56001–846 Gr. 1
H6	2FB-6F	1000	Reg.	Reg.	56001–846 Gr. 3
J	2FB-6F	60	*HD-C	Reg.	56001–821 Gr. 4
J1	2FB-6F	100	*HD-C	Reg.	56001–821 Gr. 5
J2	2FB-6F	200	*HD-C	Reg.	56001–821 Gr. 6
J3	2FB-6F	350	*HD-C	Reg.	56001–821 Gr. 7
J4	2FB-6F	500	*HD-C	Reg.	56001–821 Gr. 2
J5	2FB-6F	900	*HD-C	Reg.	56001–821 Gr. 1
J6	2FB-6F	1000	*HD-C	Reg.	56001–821 Gr. 3
K	2FB-2F-1B	1800	Reg.	Reg.	56001–833 Gr. 1
K1	2FB-2F-1B	.04-700	HD-C	Reg.	56001–785 Gr. 43
M	2FB-2F-4B	28.5	Reg.	Reg.	56001–857 Gr. 1

(Continued on following page)

Type B, Size 1, Direct-Current

Regular Releasing Neutral Relay

Line and Track

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Contact Combination	Res. Ohms	Service		Drawing Reference
			Front Contact	Back Contact	
M1	2FB-2F-4B	60	Reg.	Reg.	56001-825 Gr. 8
M2	2FB-2F-4B	100	Reg.	Reg.	56001-825 Gr. 5
M3	2FB-2F-4B	160	Reg.	Reg.	56001-825 Gr. 7
M4	2FB-2F-4B	200	Reg.	Reg.	56001-825 Gr. 4
M5	2FB-2F-4B	350	Reg.	Reg.	56001-825 Gr. 6
M6	2FB-2F-4B	500	Reg.	Reg.	56001-825 Gr. 2
M7	2FB-2F-4B	900	Reg.	Reg.	56001-825 Gr. 1
M8	2FB-2F-4B	1000	Reg.	Reg.	56001-825 Gr. 3
N	2FB-3F-3B	28.5	Reg.	Reg.	56001-838 Gr. 1
N1	2FB-3F-3B	28.5-.069	Reg.	Reg.	56001-785 Gr. 52
P	2FB-5F-1B	60	Reg.	Reg.	56001-829 Gr. 4
P1	2FB-5F-1B	100	Reg.	Reg.	56001-829 Gr. 5
P2	2FB-5F-1B	200	Reg.	Reg.	56001-829 Gr. 6
P3	2FB-5F-1B	350	Reg.	Reg.	56001-829 Gr. 7
P4	2FB-5F-1B	500	Reg.	Reg.	56001-829 Gr. 2
P5	2FB-5F-1B	900	Reg.	Reg.	56001-829 Gr. 1
P6	2FB-5F-1B	1000	Reg.	Reg.	56001-829 Gr. 3
Q	3FB-2F-1B-1MB	36	Reg.	Reg.	56001-862 Gr. 8
Q1	3FB-2F-1B-1MB	100	Reg.	Reg.	56001-862 Gr. 5
Q2	3FB-2F-1B-1MB	160	Reg.	Reg.	56001-862 Gr. 7
Q3	3FB-2F-1B-1MB	200	Reg.	Reg.	56001-862 Gr. 4
Q4	3FB-2F-1B-1MB	350	Reg.	Reg.	56001-862 Gr. 6
Q5	3FB-2F-1B-1MB	500	Reg.	Reg.	56001-862 Gr. 2
Q6	3FB-2F-1B-1MB	900	Reg.	Reg.	56001-862 Gr. 1
Q7	3FB-2F-1B-1MB	1000	Reg.	Reg.	56001-862 Gr. 3
R	3F-6B	4	Reg.	Reg.	56001-834 Gr. 1
R2	3F-6B	100	HD-S	HD-S	56001-855 Gr. 1
S	4F-2B	1.0	Reg.	Reg.	56001-860 Gr. 1

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY April 1951

Type B, Size 1, Direct-Current

Regular Releasing Neutral Relay

Line and Track

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Contact Combination	Res. Ohms	Service		Drawing Reference
			Front Contact	Back Contact	
S1	4F-2B	1.8	Reg.	Reg.	56001–734 Gr. 2
S2	4F-2B	4.0	Reg.	Reg.	56001–734 Gr. 1
S3	4F-2B	500	Reg.	Reg.	56001–789 Gr. 1
S4	4F-2B	1000	Reg.	Reg.	56001–789 Gr. 2
T	4F-2B	.04-28	HD-C	Reg.	56001–785 Gr. 42
U	4F	100	**EHD	Reg.	56001–785 Gr. 51
V	4FB-2F-1B	36	Reg.	Reg.	56001–783 Gr. 8
V1	4FB-2F-1B	100	Reg.	Reg.	56001–783 Gr. 5
V2	4FB-2F-1B	160	Reg.	Reg.	56001–783 Gr. 7
V3	4FB-2F-1B	200	Reg.	Reg.	56001–783 Gr. 4
V4	4FB-2F-1B	350	Reg.	Reg.	56001–783 Gr. 6
V5	4FB-2F-1B	500	Reg.	Reg.	56001–783 Gr. 2
V6	4FB-2F-1B	900	Reg.	Reg.	56001–783 Gr. 1
V7	4FB-2F-1B	1000	Reg.	Reg.	56001–783 Gr. 3
W	4FB-2F-1B	1.8	Reg.	Reg.	56001–787 Gr. 2
W1	4FB-2F-1B	4	Reg.	Reg.	56001–787 Gr. 1
W2	4FB-2F-1B	41	Reg.	Reg.	56001–850 Gr. 1
W3	4FB-2F-1B	100	*Reg.	Reg.	56001–810 Gr. 5
W4	4FB-2F-1B	160	*Reg.	Reg.	56001–810 Gr. 7
W5	4FB-2F-1B	200	*Reg.	Reg.	56001–810 Gr. 4
W6	4FB-2F-1B	350	*Reg.	Reg.	56001–810 Gr. 6
W7	4FB-2F-1B	500	*Reg.	Reg.	56001–810 Gr. 2
W8	4FB-2F-1B	900	*Reg.	Reg.	56001–810 Gr. 1
W9	4FB-2F-1B	1000	*Reg.	Reg.	56001–810 Gr. 3
X	4FB-2F-1B	100	HD-C	HD-C	56001–822 Gr. 5
X1	4FB-2F-1B	160	HD-C	HD-C	56001–822 Gr. 7
X2	4FB-2F-1B	200	HD-C	HD-C	56001–822 Gr. 4

(Continued on following page)

April 1951 GENERAL RAILWAY SIGNAL COMPANY

Type B, Size 1, Direct-Current

Regular Releasing Neutral Relay

Line and Track

Drawing references are shown for convenience in checking shipping lists and invoices.

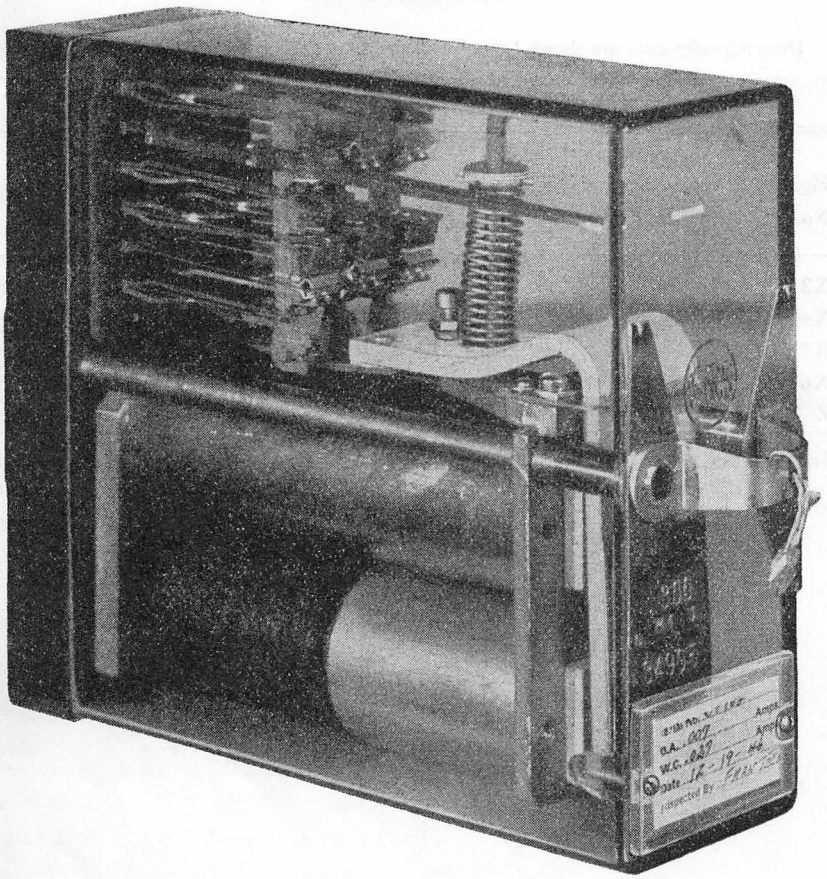
Order by plate, figure number and name

Fig. No.	Contact Combination	Res. Ohms	Service		Drawing Reference
			Front Contact	Back Contact	
X3	4FB-2F-1B	350	HD-C	HD-C	56001–822 Gr. 6
X4	4FB-2F-1B	500	HD-C	HD-C	56001–822 Gr. 2
X5	4FB-2F-1B	900	HD-C	HD-C	56001–822 Gr. 1
X6	4FB-2F-1B	1000	HD-C	HD-C	56001–822 Gr. 3
Z	6F-3B	4	Reg.	Reg.	56001–799 Gr. 1

Legend—Reg. —Regular duty contacts
HD-C—Heavy duty contacts—carbon
HD-S—Heavy duty contacts—silver
EHD —Extra heavy duty contacts—magnetic blowouts

*.090″ front contact opening
**.125″ front contact opening

PLATE E3105



Height—$6\frac{5}{16}$″
Width—$2\frac{7}{16}$″
Depth—$8\frac{9}{16}$″

Type B, Size 1, Direct-Current Slow Releasing Neutral Relay

Type B, Size 1, Direct-Current

Slow Releasing Neutral Relay

Line

NOTE: This relay may be furnished in any one of the several contact combinations as listed below.

If relay with other contact combination, resistance or release time is required kindly consult our nearest district office.

All relays have .050" front contact opening.

For additional information on Type B relays refer to Handbook 33.

For details see Plate E3121.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Contact Combination	Res. Ohms	Service		Time of Release Seconds at ____ Volts	Drawing Reference
			Front Contact	Back Contact		
A	2FB	460	Reg.	Reg.	3.0 Minimum at 9.0	56001–830 Gr. 1
B	4FB	194	Reg.	Reg.	3.0 Minimum at 12.0	56001–774 Gr. 1
B1	4FB	194	Reg.	Reg.	2.0 Minimum at 12.0	56001–828 Gr. 1
C	4FB-2F-1B	80	Reg.	Reg.	.5 Minimum at 3.0	56001–812 Gr. 1
C1	4FB-2F-1B	100	Reg.	Reg.	.5 Minimum at 13.2	56001–806 Gr. 1
C2	4FB-2F-1B	300	Reg.	Reg.	1.7 Minimum at 8.4	56001–817 Gr. 1
C3	4FB-2F-1B	450	Reg.	Reg.	.5 Minimum at 9.1	56001–818 Gr. 1
C4	4FB-2F-1B	470	Reg.	Reg.	1.0 Minimum at 10.0	56001–792 Gr. 2
C5	4FB-2F-1B	800	Reg.	Reg.	.9 Minimum at 10.0	56001–792 Gr. 1
D	4FB-2F-1B	45	HD-C	HD-C	3.0 Minimum at 10.0	56001–823 Gr. 1
D1	4FB-2F-1B	42	Reg.	Reg.	1.3 Minimum at 12.0	56001–824 Gr. 1
E	4FB-1F-2B	900	Reg.	Reg.	1.0-1.1 at 12.0	56001–836 Gr. 1
F	6FB	194	Reg.	Reg.	3.0 Minimum at 12.0	56001–779 Gr. 1
F1	6FB	340	Reg.	Reg.	1.0 Minimum at 10.0	56001–780 Gr. 1
Partial Slow Release						
K	4FB	56	Reg.	Reg.	.10 Approx. at 2.4	56001–793 Gr. 4
K1	4FB	70- 70	Reg.	Reg.	.15 Approx. at 3.4	56001–786 Gr. 2
K2	4FB	80	Reg.	Reg.	.10 Approx. at 2.9	56001–793 Gr. 2
K3	4FB	105-105	Reg.	Reg.	.15 Approx. at 3.5	56001–786 Gr. 1
K4	4FB	140	Reg.	Reg.	.10 Approx. at 4.0	56001–793 Gr. 3
K5	4FB	210	Reg.	Reg.	.10 Approx. at 4.6	56001–793 Gr. 1
K6	4FB	250	Reg.	Reg.	.90 Minimum at 10.0	56001–808 Gr. 27

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY April 1951

Type B, Size 1, Direct-Current

Slow Releasing Neutral Relay

Line

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Contact Combination	Res. Ohms	Service: Front Contact	Service: Back Contact	Time of Release Seconds at ____ Volts	Drawing Reference
K7	4FB	450	Reg.	Reg.	.90 Minimum at 10.0	56001-808 Gr. 26
M	4FB	56	HD-C	HD-C	.10 Approx. at 2.4	56001-820 Gr. 4
M1	4FB	80	HD-C	HD-C	.10 Approx. at 2.9	56001-820 Gr. 2
M2	4FB	140	HD-C	HD-C	.10 Approx. at 4.0	56001-820 Gr. 3
M3	4FB	210	HD-C	HD-C	.10 Approx. at 4.6	56001-820 Gr. 1
N	4F-2B	5.2	Reg.	Reg.	.30 Minimum at 1.0	56001-758 Gr. 1
N1	4F-2B	28- 28	Reg.	Reg.	.10 Minimum at 2.8	56001-809 Gr. 2
N2	4F-2B	40- 40	Reg.	Reg.	.10 Minimum at 3.4	56001-809 Gr. 3
N3	4F-2B	70- 70	Reg.	Reg.	.10 Minimum at 4.6	56001-809 Gr. 4
N4	4F-2B	105-105	Reg.	Reg.	.15 to .23 at 6.0	56001-809 Gr. 1
P	4FB-2F-1B	250-250	Reg.	Reg.	.25 Minimum at 10.0	56001-832 Gr. 1
P1	4FB-2F-1B	105-105	Reg.	Reg.	.10 Minimum at 5.4	56001-852 Gr. 1
P2	4FB-2F-1B	100	Reg.	Reg.	.25 Approx. at 4.5	56001-854 Gr. 1
P3	4FB-2F-1B	200	Reg.	Reg.	.25 Approx. at 6.6	56001-854 Gr. 2
P4	4FB-2F-1B	250	Reg.	Reg.	.25 Approx. at 6.8	56001-854 Gr. 3
P5	4FB-2F-1B	330	Reg.	Reg.	.25 Approx. at 8.4	56001-854 Gr. 4
P6	4FB-2F-1B	500	Reg.	Reg.	.25 Approx. at 9.0	56001-854 Gr. 5
P7	4FB-2F-1B	600	Reg.	Reg.	.25 Approx. at 10.8	56001-854 Gr. 6
P8	4FB-2F-1B	1000	Reg.	Reg.	.25 Approx. at 15.	56001-854 Gr. 7
P9	4FB-2F-1B	2100	Reg.	Reg.	.25 Approx. at 21.	56001-854 Gr. 8
R	4FB-1F-2B	900	Reg.	Reg.	.80 to .90 at 21.6	56001-841 Gr. 1

April 1951 GENERAL RAILWAY SIGNAL COMPANY

Type B, Size 1, Direct-Current

Slow Pickup and Slow Releasing Neutral Relay

NOTE: This relay may be furnished in any one of the several contact combinations as listed below.

If relay with other contact combination, resistance, pickup or release time is required, kindly consult our nearest district office.

All relays have .050" front contact opening.

For additional information on Type B relays refer to Handbook 33.

For details see Plate E3121.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Contact Combination	Res. Ohms	Service: Front Contact	Service: Back Contact	Time of Release and Pickup Seconds at ____ Volts	Drawing Reference
S	4FB	460	Reg.	Reg.	1.4 Minim. p.u. at 13.2 1.4 to 1.6 rel. at 13.2	56001-785 Gr. 38
T	4FB-2F-1B	300	Reg.	Reg.	1.1 Minim. p.u. at 12.6 0.9 to 1.0 rel. at 12.0	56001-831 Gr. 1
T1	4FB-2F-1B	194	Reg.	Reg.	1.1 Minim. p.u. at 10.5 0.9 to 1.0 rel. at 10.0	56001-851 Gr. 1
*U	3F	900	Reg.	—	1.5 Minim. rel. at 24.0	56001-785 Gr. 44

*Rectifier shown on Plate P1799, Fig. D4, must be connected across coils to obtain this slow release time.

GENERAL RAILWAY SIGNAL COMPANY April 1951

Type B, Size 1, Direct-Current

Slow Pickup Neutral Relay

NOTE: These relays may be furnished in any one of the several contact combinations as listed below.

If relay with other contact combination, resistance or pickup time is required, kindly consult our nearest district office.

All relays have .050″ front contact opening.

For additional information on Type B relays refer to Handbook 33.

For details see Plate E3121.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Contact Combination	Res. Ohms	Service		Time of Pickup Seconds at ____ Volts	Drawing Reference
			Front Contact	Back Contact		
V	1MB-3FB-2F-1B	300	Reg.	Reg.	1.5 Minimum at 13.2	56001–815 Gr. 1
W	2FB-6F	300	Reg.	Reg.	1.5 Minimum at 13.2	56001–847 Gr. 1
X	4FB-2F-1B	24	Reg.	Reg.	0.8 Minimum at 4.0	56001–805 Gr. 1
X1	4FB-2F-1B	230	Reg.	Reg.	1.4 Minimum at 11.0	56001–807 Gr. 1
X2	4FB-2F-1B	300	Reg.	Reg.	1.4 Minimum at 13.2	56001–790 Gr. 1
X3	4FB-2F-1B	125-230	Reg.	Reg.	0.6 Minimum at 12.0	56001–785 Gr. 47

June 1954 GENERAL RAILWAY SIGNAL COMPANY

Type B, Size 1, Direct-Current

Slow Pickup, Slow Release and Quick Crossover Neutral Relay

NOTE—The slow pickup and slow release features of this relay are slightly different than usual in that the relay maintains full contact pressure for the required time and then operates very rapidly. This quick crossover feature (both pickup and release) is desirable for relays used to pole change circuits, especially when there are relays in the pole changed circuit that must remain energized during the period that the circuit is open.

This relay is usually furnished with 4FB, 2F and 1B contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back. Relay has .050″ front contact opening. If relay with other contact combination, resistance, normal volts, pickup or release time is required, kindly consult our nearest district office.

For details see Plate E3121.

Drawing references are shown for convenience in checking shipping lists and invoices.

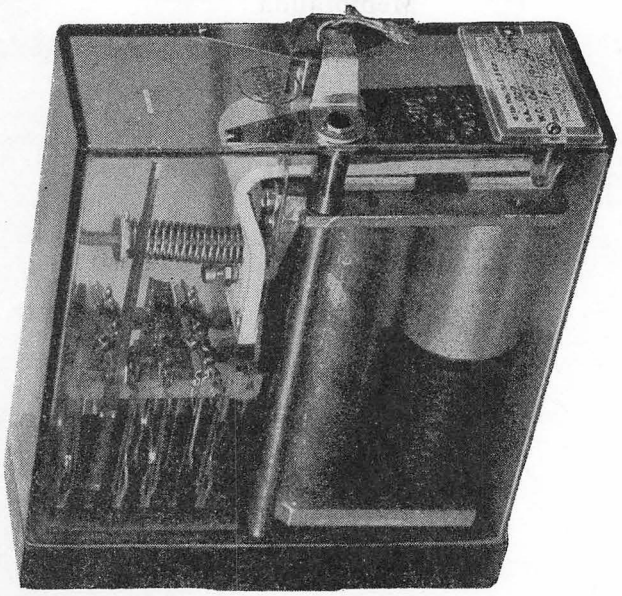
Order by plate, figure number and name

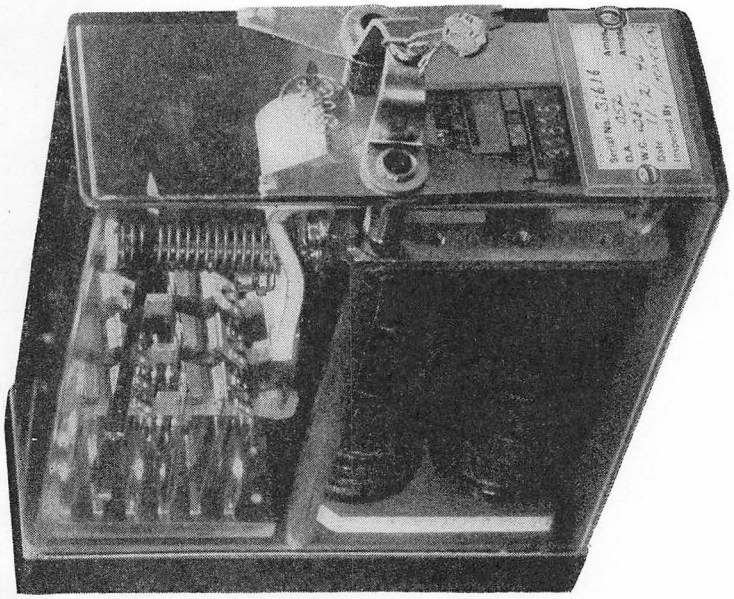
Fig. No.	Res. of Relay Ohms	Minimum Time of Pickup Seconds	Minimum Time of Release Seconds	Normal Volts	Drawing Reference
Z	135	1.15	.70	10	56001–785 Gr. 69
Z1	230	1.2	.75	12	56001–785 Gr. 68

Memoranda

Memoranda

PLATE E3107





Height—$6\frac{5}{16}$″
Width—$2\frac{7}{16}$″
Depth—$8\frac{9}{16}$″

Type B, Size 1, Direct-Current Primary-Secondary Relay Combination

April 1951 GENERAL RAILWAY SIGNAL COMPANY

Type B, Size 1, Direct-Current

Primary-Secondary Relay Combination

NOTE: The primary-secondary combination listed below is a standard combination that has been furnished. If other combinations are required order must specify the following:

(1). Characteristics and limitations of track circuits and circuits controlled if possible.

(2). State number and type of cells in battery available for secondary operating relay.

The primary relay has 4F-2B regular duty contacts.

The secondary relay has 3FB, 2F, 1B, regular duty contacts, and 1MB contact.

Contacts are silver-impregnated carbon to silver front and silver to silver back except "make-before-break contact" which is silver to silver front and back.

Relays have .050″ front contact opening.

For additional information on primary-secondary relay see Handbook 33, Part IV.

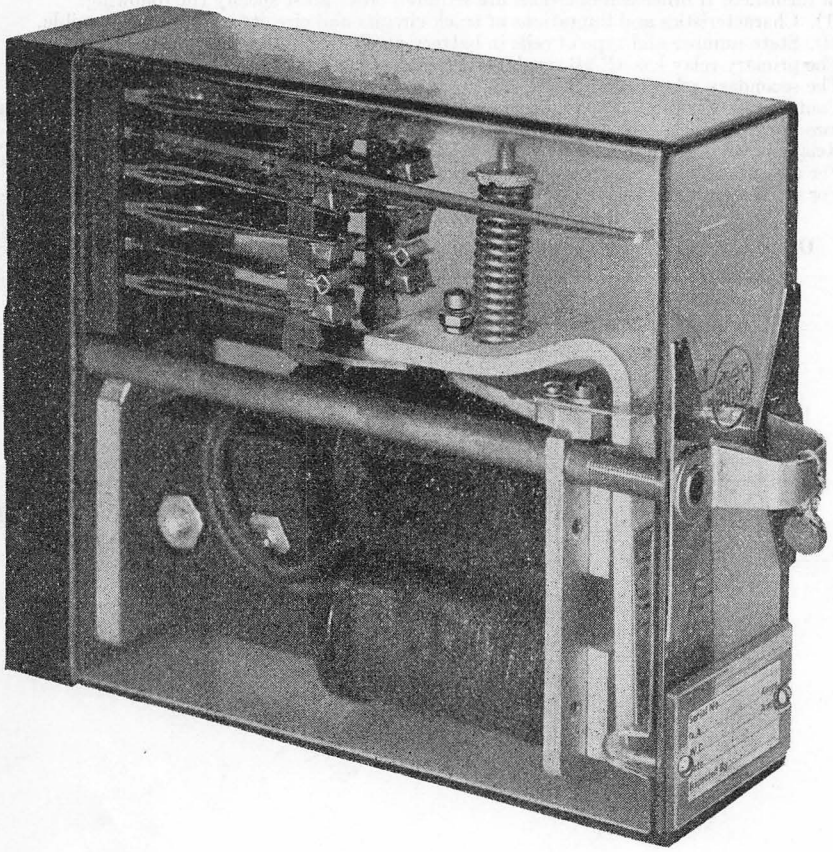
For details see Plate E3121.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Primary Size 1 Res.-Ohms	Secondary Size 1 Res.-Ohms	Secondary Relay 1.5 Seconds Pickup at 70° F (in volts)	Drawing Reference
A	4	300	13.2	56001–785 Gr. 36 56001–815 Gr. 1

PLATE E3109



Height—$6\frac{5}{16}$″
Width—$2\frac{7}{16}$″
Depth—$8\frac{9}{16}$″

Type B, Size 1, Direct-Current Magnetic Stick Relay

April 1951 GENERAL RAILWAY SIGNAL COMPANY

Type B, Size 1, Direct-Current

Magnetic-Stick Relay

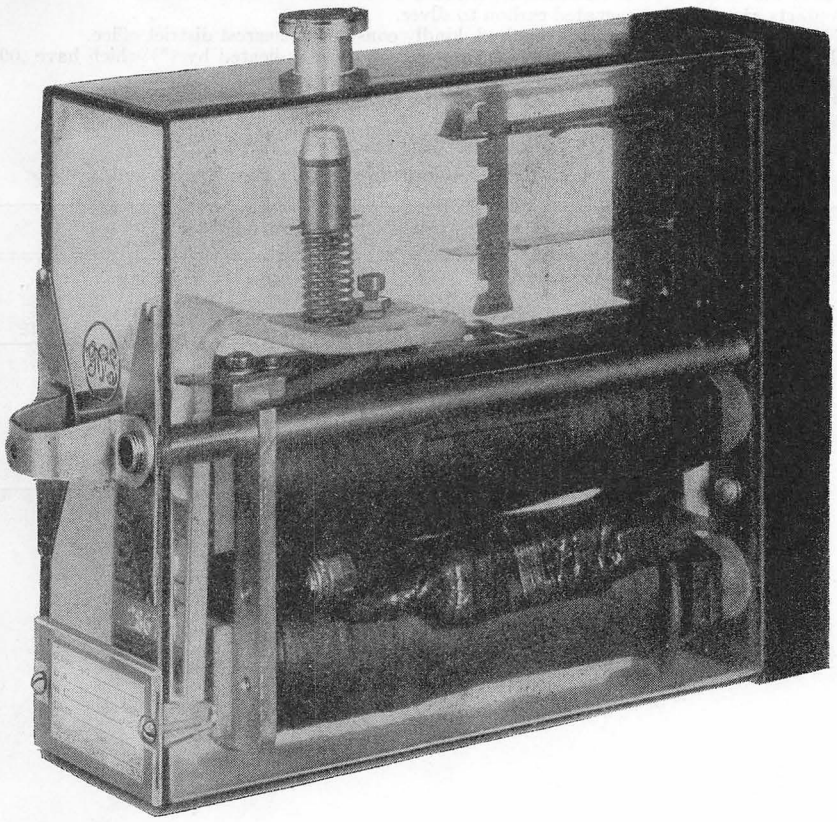
NOTE: This relay is always furnished with four normal and reverse contacts.
Contacts are silver impregnated carbon to silver.
If relay with other resistance is required, kindly consult our nearest district office.
All relays have .050″ front contact opening except those indicated by (*) which have .090″ opening.
For additional information on these relays refer to Handbook 33, Part V.
For details see Plate E3123.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Res.—Ohms	Drawing Reference
A	30	56001–791 Gr. 1
A1	46	56001–791 Gr. 2
*A2	500	56001–814 Gr. 1
A3	1100	56001–791 Gr. 3

PLATE E3111



Height—$6\frac{5}{16}$″
Width—$2\frac{7}{16}$″
Depth—$8\frac{9}{16}$″

Type B, Size 1, Direct-Current
Two-Rate Charge Control Neutral Relay

April 1951 GENERAL RAILWAY SIGNAL COMPANY

Type B, Size 1, Direct-Current

Two-Rate Charge Control Neutral Relay

For Lead Cells

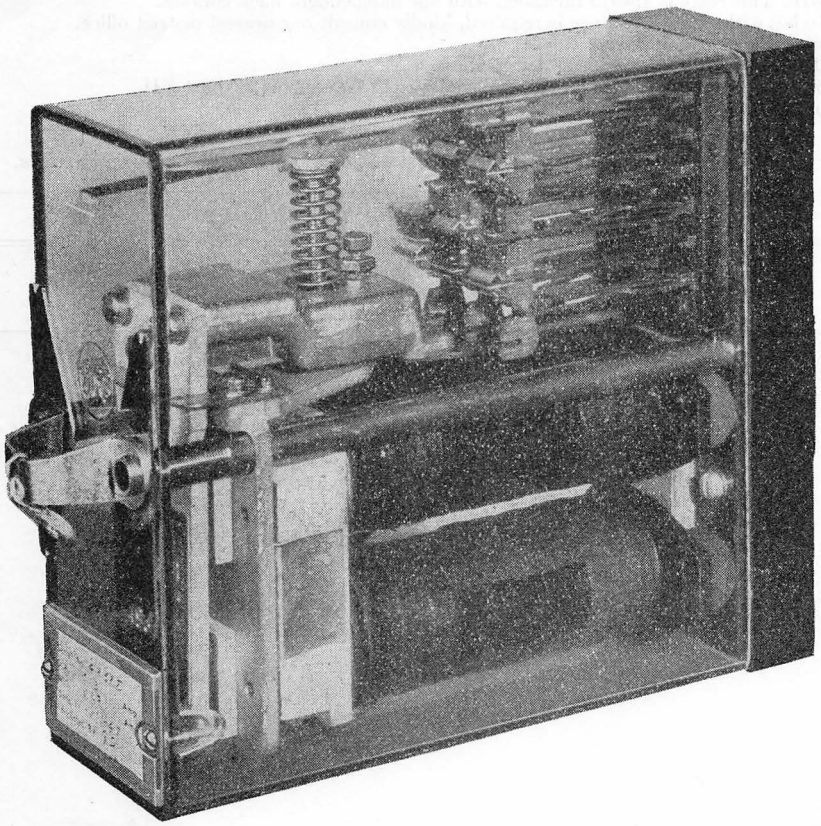
NOTE: This relay is always furnished with one independent back contact.
If relay with other resistance is required, kindly consult our nearest district office.
Contact is silver to silver.
All relays have .050″ back contact opening.
For additional information on these relays refer to Handbook 33, Part VII.
For details see Plate E3125.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Res. Ohms	Number Cells Lead Battery	Drawing Reference
A	710	4 to 7	56001–749 Gr. 1
A1	1575	10 to 14	56001–749 Gr. 2
A2	14215	50 to 57	56001–749 Gr. 3

PLATE E3113



Height—$6\frac{5}{16}$″
Width—$2\frac{7}{16}$″
Depth—$8\frac{9}{16}$″

Type B, Size 1, Direct-Current Biased-Neutral Relay

April 1951 GENERAL RAILWAY SIGNAL COMPANY

Type B, Size 1, Direct-Current

Biased-Neutral Relay

NOTE: This relay may be furnished in any one of several contact combinations as listed below. If relay with other contact combination or resistance is required, kindly consult our nearest district office.

Contacts are silver impregnated carbon to silver front and silver to silver back.

All relays have .050″ front contact opening.

For additional information on these relays refer to Handbook 33, Part V.

For details see Plate E3125.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Contact Combination	Res. Ohms	Drawing Reference
A	2FB-2F-4B	63	56001-835 Gr. 5
A1	2FB-2F-4B	100	56001-835 Gr. 2
A2	2FB-2F-4B	200	56001-835 Gr. 8
A3	2FB-2F-4B	250	56001-835 Gr. 1
A4	2FB-2F-4B	500	56001-835 Gr. 7
A5	2FB-2F-4B	600	56001-835 Gr. 3
A6	2FB-2F-4B	1000	56001-835 Gr. 4
A7	2FB-2F-4B	2100	56001-835 Gr. 6
B	4FB	63	56001-804 Gr. 5
B1	4FB	100	56001-804 Gr. 2
B2	4FB	200	56001-804 Gr. 8
B3	4FB	250	56001-804 Gr. 1
B4	4FB	500	56001-804 Gr. 7
B5	4FB	600	56001-804 Gr. 3
B6	4FB	1000	56001-804 Gr. 4
B7	4FB	2100	56001-804 Gr. 6
C	4F-2B	1	56001-861 Gr. 1
C1	4F-2B	2	56001-856 Gr. 1
C2	4F-2B	4	56001-856 Gr. 2
D	4FB-2F-1B	2	56001-803 Gr. 9
D1	4FB-2F-1B	63	56001-803 Gr. 5
D2	4FB-2F-1B	100	56001-803 Gr. 2
D3	4FB-2F-1B	200	56001-803 Gr. 8
D4	4FB-2F-1B	250	56001-803 Gr. 1
D5	4FB-2F-1B	500	56001-803 Gr. 7

(Continued on following page)

PLATE E3113

Type B, Size 1, Direct-Current

Biased-Neutral Relay

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Contact Combination	Res. Ohms	Drawing Reference
D6	4FB-2F-1B	600	56001-803 Gr. 3
D7	4FB-2F-1B	1000	56001-803 Gr. 4
D8	4FB-2F-1B	2100	56001-803 Gr. 6
E	6FB	63	56001-801 Gr. 5
E1	6FB	100	56001-801 Gr. 2
E2	6FB	200	56001-801 Gr. 8
E3	6FB	250	56001-801 Gr. 1
E4	6FB	500	56001-801 Gr. 7
E5	6FB	600	56001-801 Gr. 3
E6	6FB	1000	56001-801 Gr. 4
E7	6FB	2100	56001-801 Gr. 6
E8	6FB	50-300	56001-802 Gr. 1
F	7F-2B	63	56001-853 Gr. 5
F1	7F-2B	100	56001-853 Gr. 2
F2	7F-2B	200	56001-853 Gr. 8
F3	7F-2B	250	56001-853 Gr. 1
F4	7F-2B	500	56001-853 Gr. 7
F5	7F-2B	600	56001-853 Gr. 3
F6	7F-2B	1000	56001-853 Gr. 4
F7	7F-2B	2100	56001-853 Gr. 6

Memoranda

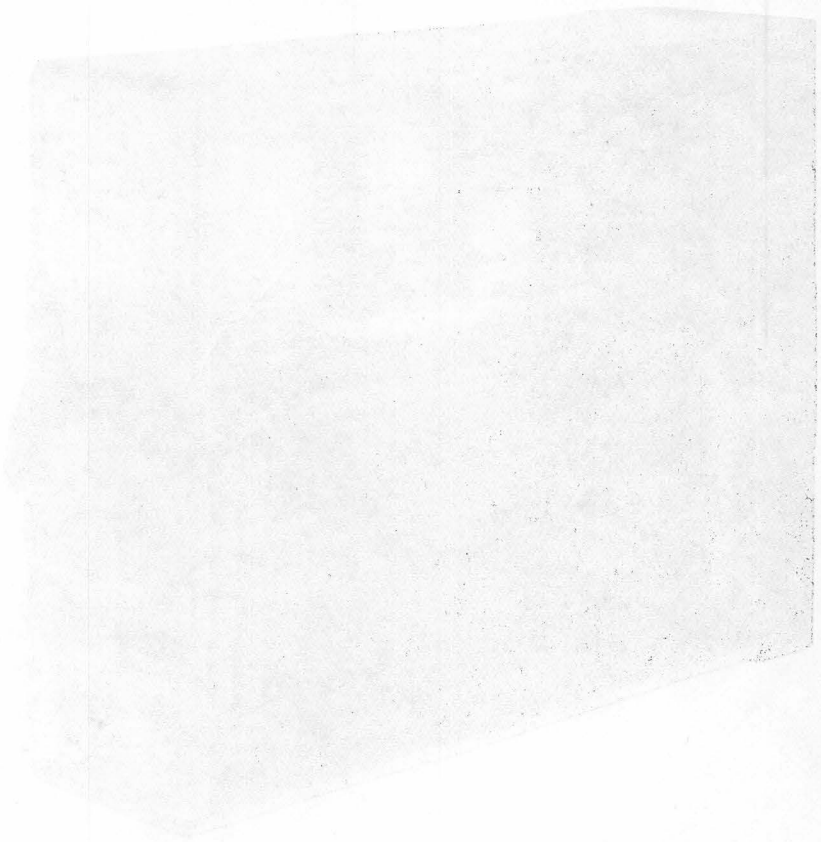
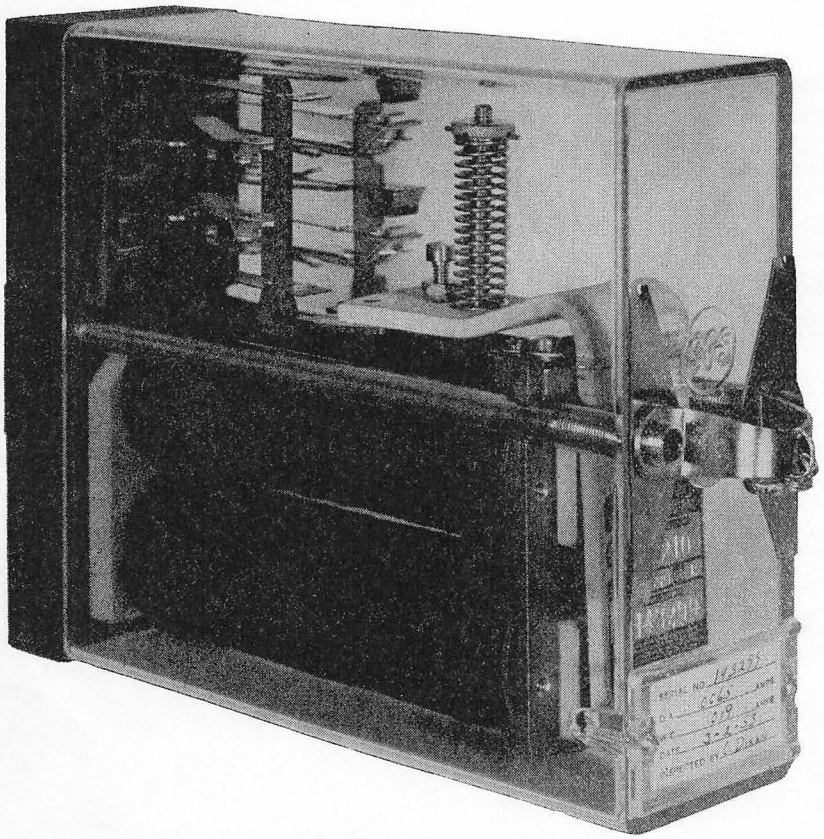


PLATE E3114



Height—6 5/16″
Width—2 7/16″
Depth—8 9/16″

Type B, Size 1, Direct-Current
Lamp Control Neutral Relay

June 1954 GENERAL RAILWAY SIGNAL COMPANY

Type B, Size 1, Direct-Current

Lamp Control Relay

NOTE—This relay was designed primarily for controlling lamp circuits at highway crossings which are protected by flashing lights.

The contacts will carry up to 15 amperes at 10 to 12 volts.

This relay is usually furnished with two dependent front and back regular contacts and two dependent lamp control contacts.

The regular contacts are silver-impregnated carbon to silver front and silver to silver back.

The lamp control contacts are silver to silver.

Regular contacts have .090″ front contact opening.

Lamp control contacts have .050″ opening.

For details see Plate E3114-1.

Drawing references are shown for convenience in checking shipping lists and invoices.

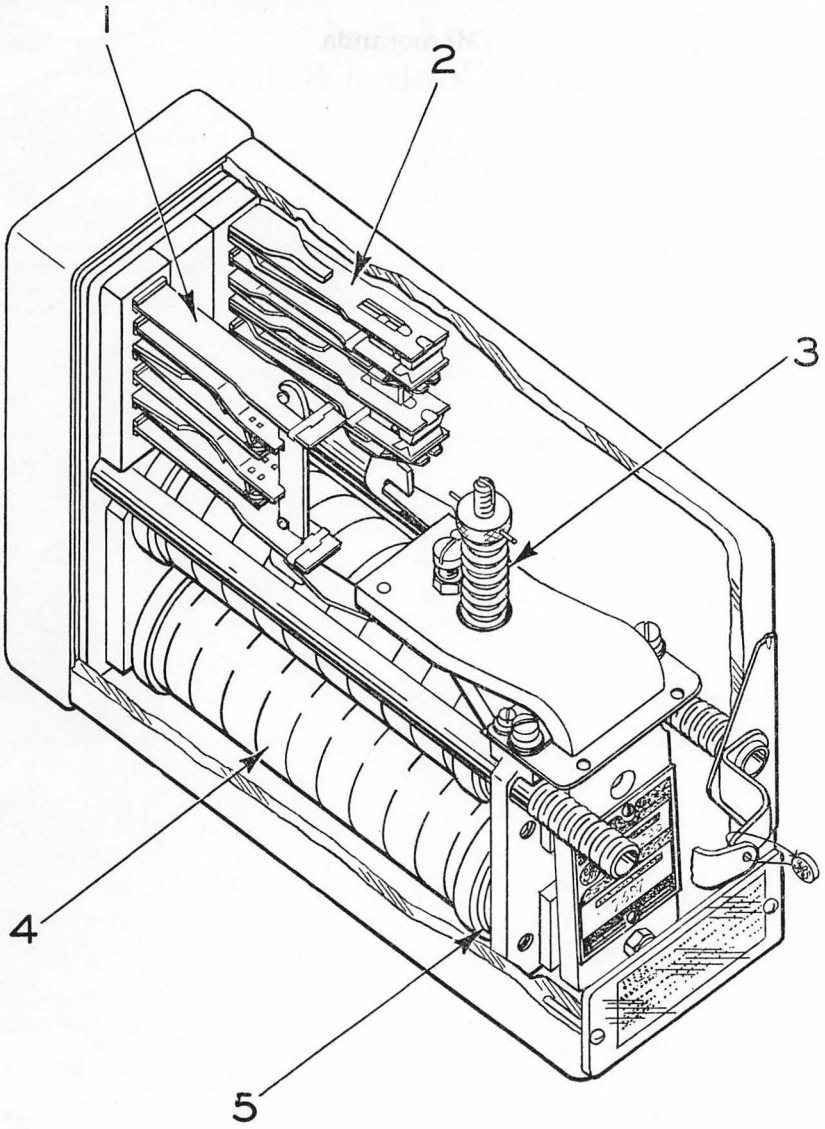
Order by plate, figure number and name

Fig. No.	Res.—Ohms	Normal Volts	Drawing Reference
A	210	10–12	56001–880 Gr. 1

Memoranda

Memoranda

GENERAL RAILWAY SIGNAL COMPANY June 1954



FOR DETAIL PARTS NOT SHOWN HERE, SEE PLATE E 3121

Type B, Size 1
Lamp Control Neutral Relay

June 1954 GENERAL RAILWAY SIGNAL COMPANY

Type B, Size 1

Lamp Control Relay

NOTE—The detail parts shown on this plate are special for these relays. For all other detail parts for these relays see Plate E3121.

For registration parts and gasketing see Plate E3171.

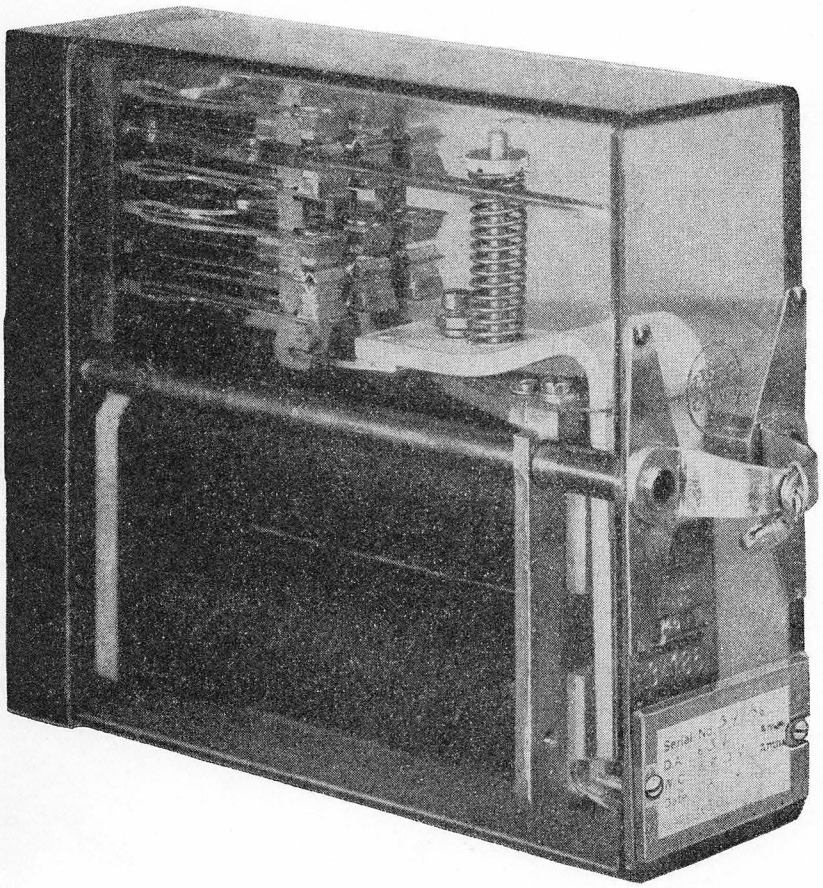
Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
1	Contact Group, 2B, lamp control, When ordering contact group, order must specify drawing number of relay for which contact group is required	56012–53 Gr. 1
2	Contact Group, for details and order references see Plate E3143, Fig. A	
3	Spring, for setting back contacts. When ordering spring, order must specify drawing number of relay for which spring is required	
4	Coil, for relay. When ordering coil, order must specify drawing number of relay for which coil is required	
5	Washer, copper	1225–94

Memoranda

Memoranda

PLATE E3115



Height—6$\frac{5}{16}$″
Width—2$\frac{7}{16}$″
Depth—8$\frac{9}{16}$″

Type B, Size 1, Power-Transfer Neutral Relay

April 1951 GENERAL RAILWAY SIGNAL COMPANY

Type B, Size 1
Power-Transfer Neutral Relay

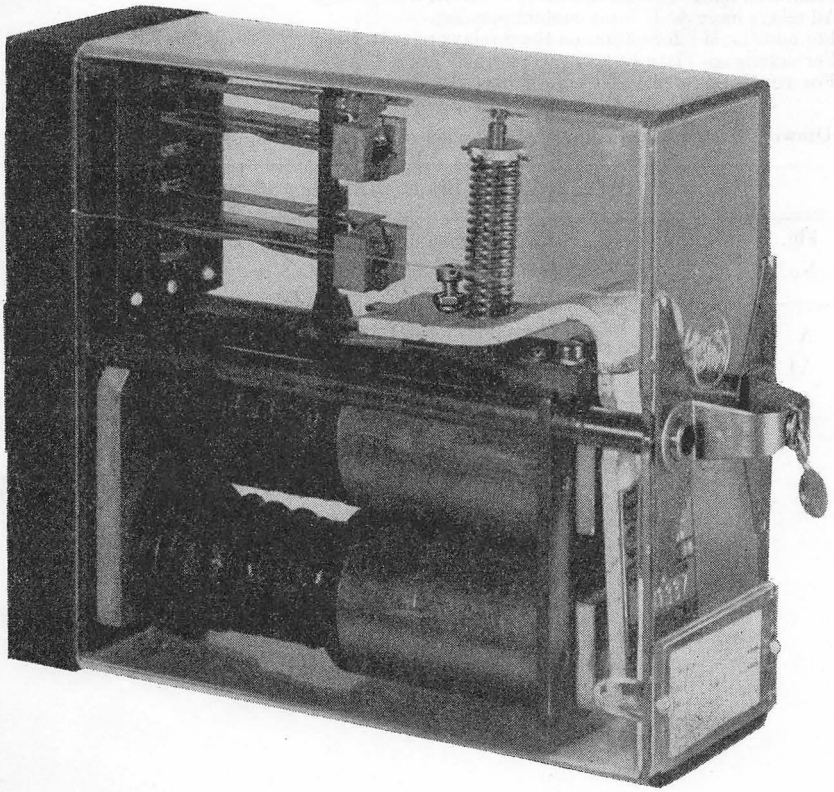
NOTE: This relay may be furnished in either of the two contact combinations as listed below.
If relay with other resistance is required, kindly consult our nearest district office.
Front and back contacts are silver to silver, heavy duty.
All relays have .050″ front contact opening.
For additional information on these relays refer to Handbook 33, Parts VII and X.
For details see Plate E3127.
For rectifier used with this relay, see Plate E3127.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Contact Combination	Res.—Each Side Ohms	Rated Voltage a-c.	Drawing Reference
A	2FB	50- 50	10	56001–721 Gr. 1
A1	6FB	100-100	10	56001–745 Gr. 1
A2	6FB	100-100	12	56001–745 Gr. 2

PLATE E3117



Height—$6\frac{5}{16}$″
Width—$2\frac{7}{16}$″
Depth—$8\frac{9}{16}$″

Type B, Size 1, Direct-Current Switch Overload Neutral Relay

April 1951 GENERAL RAILWAY SIGNAL COMPANY

Type B, Size 1, Direct-Current

Switch Overload Neutral Relay

NOTE: This relay may be furnished in any one of several contact combinations as listed below. If relay with other contact combination, resistance or current setting is required, kindly consult our nearest district office.

Contacts are silver to silver with magnetic blowouts.

All relays have .125″ front contact opening except those otherwise indicated.

For additional information on these relays refer to Handbook 33, Part VII.

For details see Plate E3127.

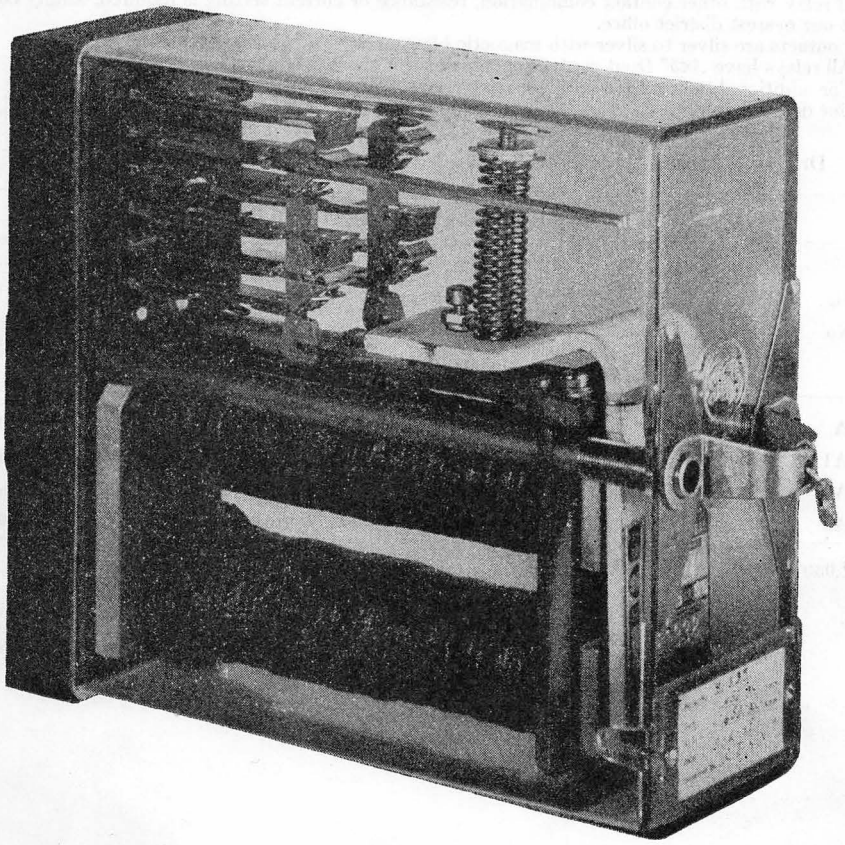
Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Contact Combination	Resistance Ohms	For High or Low Voltage Switch Machines	Current Setting Amps.	Drawing References
A	2B	.068- 135	High or Low	15.25 to 15.75	56001–785 Gr. 30
A1	2B	.068- 230	High or Low	10.75 to 11.25	56001–785 Gr. 14
A2	2B	.068-1225	High	10.75 to 11.25	56001–785 Gr. 1
*A3	2FB	.068- 230	High or Low	11.5 to 12.5	56001–785 Gr. 49

*.030″ front contact opening

PLATE E3119



Height—$6\frac{5}{16}$"
Width—$2\frac{7}{16}$"
Depth—$8\frac{9}{16}$"

Type B, Size 1, Direct-Current Light-Out Neutral Relay

April 1951 GENERAL RAILWAY SIGNAL COMPANY

Type B, Size 1, Direct-Current

Light-Out Neutral Relay

NOTE: This relay may be furnished in any one of several contact combinations as listed below. If relay with other contact combination, resistance or pickup and working current is required, kindly consult our nearest district office.

Contacts are silver impregnated carbon to silver front and silver to silver back.

All relays have .050″ front contact opening.

For additional information on these relays refer to Handbook 33, Parts VII and X.

For details see Plate E3123.

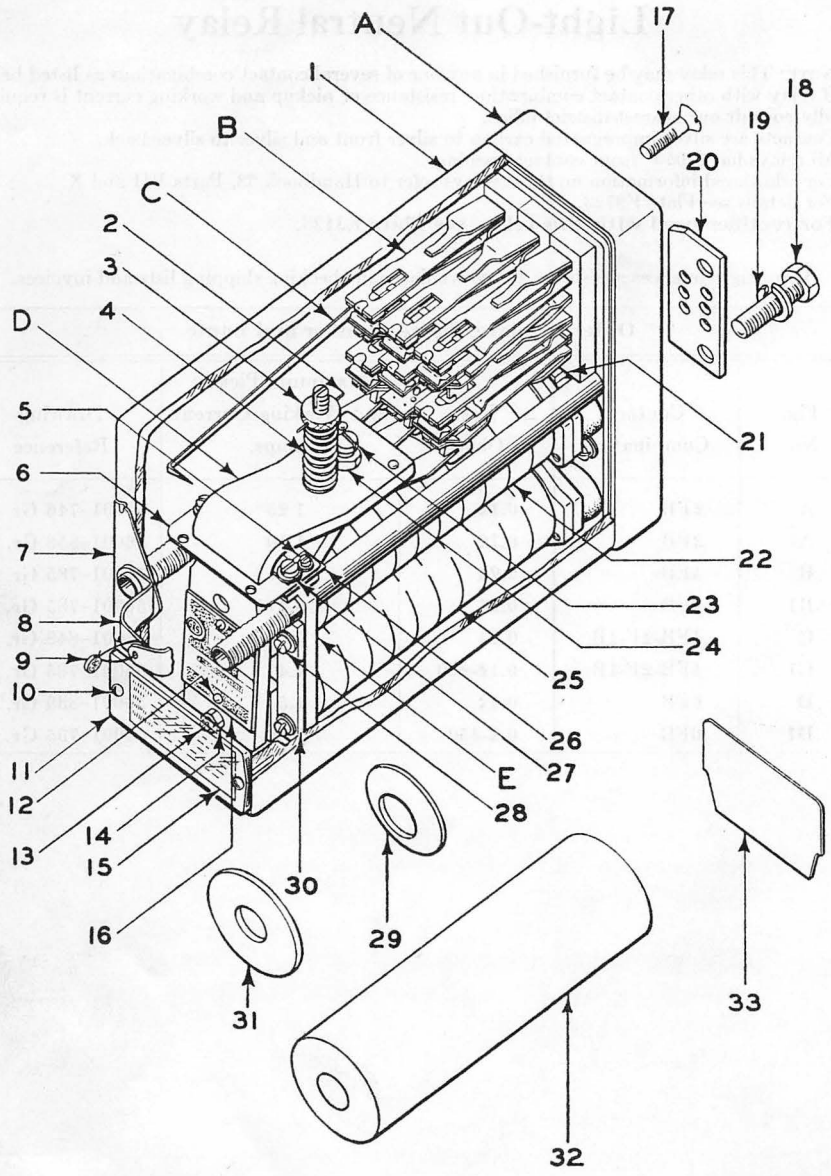
For rectifier used with this relay, see Plate E3123.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Contact Combination	Res. Ohms	Maximum Pickup and Working Current Amps.	Drawing Reference
A	2FB	0.12	1.25	56001–746 Gr. 1
A1	2FB	0.12	1.10	56001–858 Gr. 1
B	4FB	0.24	0.65	56001–785 Gr. 35
B1	4FB	0.24	0.415	56001–785 Gr. 46
C	4FB-2F-1B	0.24	0.75	56001–848 Gr. 1
C1	4FB-2F-1B	0.12-250	1.4	56001–785 Gr. 48
D	6FB	0.12	1.5	56001–839 Gr. 1
D1	6FB	0.2-450	0.86	56001–785 Gr. 10

PLATE E3121



Type B, Size 1, Neutral Relay

April 1951 GENERAL RAILWAY SIGNAL COMPANY

Type B, Size 1, Neutral Relays

NOTE: This plate is included for ordering repair parts for all Size 1 neutral relays except special parts for the following:

Biased-neutral,	see Plate E3125
Light-out,	see Plate E3123
Magnetic-stick,	see Plate E3123
Switch-overload,	see Plate E3127
Two-Rate Charge Control,	see Plate E3125
Power-transfer,	see Plate E3127

For Type B1 relays used with Coded Cab Signal Car Equipments, see Handbooks No. 16 and 22; for Train Control see Handbook No. 6 and for Coded Track Circuits see Section W, Part 1.

For registration parts and gasketing, see Plate E3171.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Base Complete, for relay, includes tube for studs. **When ordering base, order must specify drawing number of relay for which base is required.**	
B	Contact Group, for relay, for details and order references see Plate E3143	56012
C	Indicator Complete, for indicating position of contacts, includes clips for attaching to fingers. **When ordering indicator, order must specify drawing number of relay for which indicator is required.**	
D	Armature Complete, for relay, includes top and bottom residual screws and all riveted parts. **When ordering armature, order must specify drawing number of relay for which armature is required.**	
E	Core and Bracket, for relay, includes residual pins and stud for spring Fig. 4. **When ordering core and bracket, order must specify drawing number of relay for which core and bracket are required.**	
1	Cover, for relay	56029
2	Lock, for nut Fig. 3	56024
3	Nut, No. 10-32 rd., knurled, for stud on armature bracket	846–23
4	Spring, for setting back contacts. **When ordering spring, order must specify drawing number of relay for which spring is required.**	

(*Continued on following page*)

GENERAL RAILWAY SIGNAL COMPANY April 1951

Type B, Size 1, Neutral Relays

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
5	Screw, No. 4-40 x 1/4" fil. hd., with lock washer, for armature bearing plate Fig. 26	55227-5 53029-27
5a	as above, except dowel pin. For early design relays	504-313
6	Plate, armature retaining	55914-1
7	Spring, flat, follow-up for nut Fig. 8	16111-63
8	Nut, for holding and sealing cover Fig. 1 in place	56026-1
9	Seal, for relay	35285
10	Screw, No. 4-40 x 3/8" rd. hd., self-tapping, for holder Fig. 11	56190-3
11	Holder, for test data form	50023-17
12	Screw, No. 2-56 x 1/4" rd. hd., for fastening name plate to bracket	55219-3
13	Screw, residual, No. 6-40 x 3/8" lg., for armature	55968
14	Nut, No. 6-40 x 1/8" hex., for screw Fig. 13	3614-3
15	Test Data Form, for relay	51553-37
16	Name Plate, for relay	401-191
17	Screw, No. 6-40 x 1/2" fil. hd., for mounting contact blocks	369-1
18	Screw, 5/16"-24 x 1 1/8" hex. hd., for fastening cores and yokes to relay base	3440-21
19	Lock Washer, for screw Fig. 18	53029-25
20	**Yoke, for relay. When ordering yoke, order must specify drawing number of relay for which yoke is required.**	
21	**Yoke, for cores. When ordering yoke, order must specify drawing number of relay for which yoke is required.**	
22	**Coil, top, for relay. When ordering coil, order must specify drawing number of relay for which coil is required.**	
23	Screw, No. 8-32 x 1/2" fil. hd., for armature	1054-3
24	Nut, No. 8-32 elastic stop, for screw Fig. 23	42333-17
25	**Coil, bottom, for relay. When ordering coil, order must specify drawing number of relay for which coil is required.**	
26	Plate, armature bearing	55912-1

(Continued on following page)

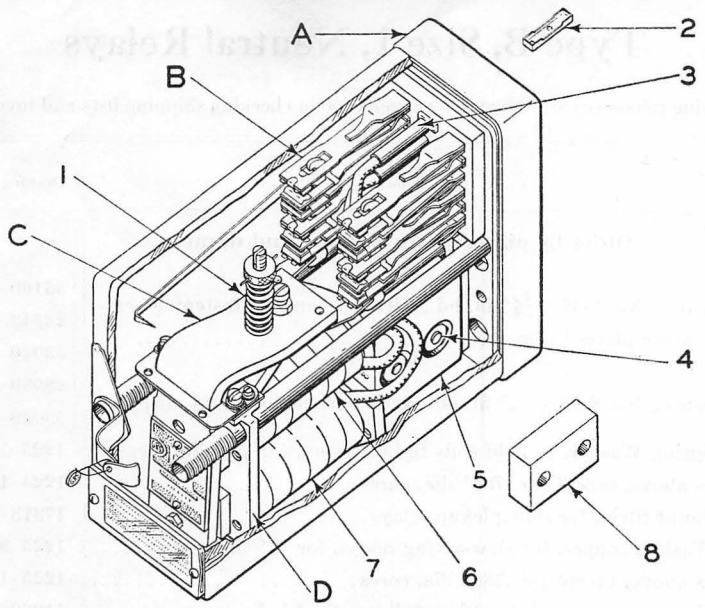
April 1951 GENERAL RAILWAY SIGNAL COMPANY

Type B, Size 1, Neutral Relays

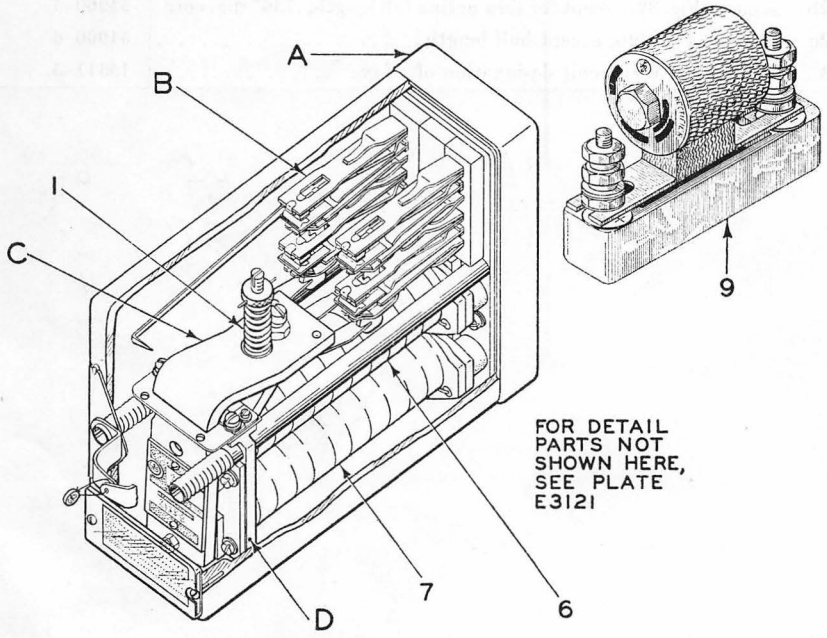
Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
27	Screw, No. 8-32 x 1/4″ fil. hd., with washers, for fastening armature plates to bracket	55160-27 22543-20 53029-21
28	Screw, No. 8-32 x 3/8″ fil. hd., with washer, for shunt strip	28989-3 53029-4
29	Spring Washer, to hold coils tight on core, for 9/16″ dia. cores	1225-104
29a	as above, except for .736″ dia. cores	1225-105
30	Shunt Strip, for slow pickup relays	17378-15
31	Washer, copper, for slow-acting relays, for 9/16″ dia. cores	1225-94
31a	as above, except for .736″ dia. cores	1225-103
32	Slug, copper, for slow acting, full length 9/16″ dia. core	54960-3
32a	as above, except half length	54960-4
32b	same as Fig. 32, except for slow acting full length, .736″ dia. core	54960-5
32c	same as Fig. 32b, except half length	54960-6
33	Tag, blank, for circuit designation of relay	15311-5

450 .10
700 6
.051 5
.150 5
8 1
300 10



Type B, Size 1, Magnetic-Stick Relay



Type B, Size 1, Light-Out Relay

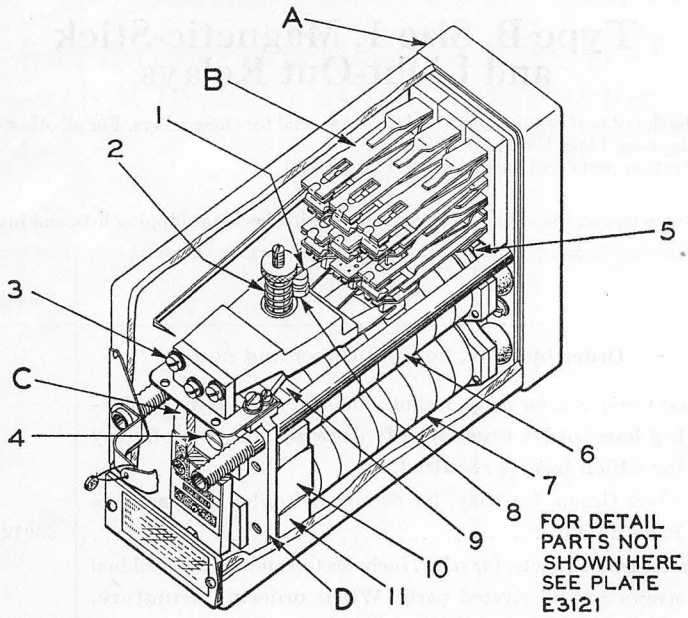
April 1951 GENERAL RAILWAY SIGNAL COMPANY

Type B, Size 1, Magnetic-Stick and Light-Out Relays

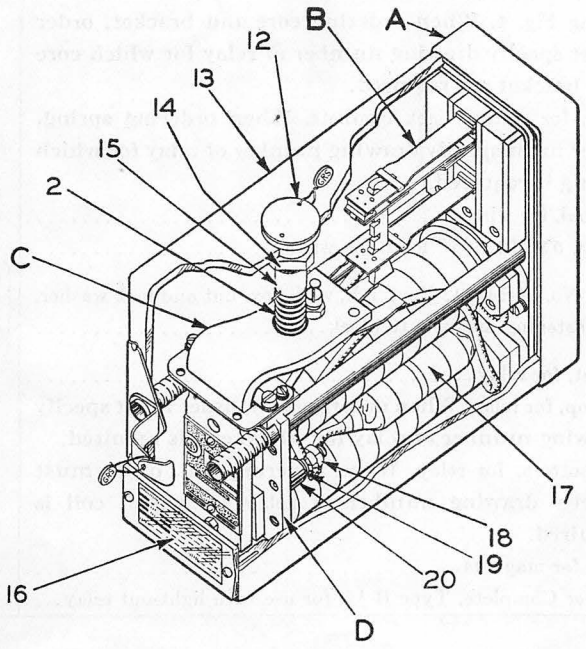
NOTE: The detail parts shown on this plate are special for these relays. For all other detail parts for these relays see Plate E3121.
For registration parts and gasketing see Plate E3171.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Base Complete, for relay, includes tube for stud. **When ordering base, order must specify drawing number of relay for which base is required.**	
B	Contact Group, for relay, for details and order references see Plate E3143	56012
C	Armature Complete, for relay, includes top and bottom residual screws and all riveted parts. **When ordering armature, order must specify drawing number of relay for which armature is required.**	
D	Core and Bracket, for relay, includes residual pins and stud for spring Fig. 4. **When ordering core and bracket, order must specify drawing number of relay for which core and bracket are required.**	
1	Spring, for setting back contacts. **When ordering spring, order must specify drawing number of relay for which spring is required.**	
2	Terminal, for wires	55083–12
3	Tubing, 5MM x 1¼″ long, for wires	55557–4
4	Screw, No. 14-24 x 1½″ sq. hd., with hex. nut and lock washer, for fastening magnets to block	350–3 42839–5 53029–2
5	Magnet, for relay	53007–16
6	Coil, top, for relay. **When ordering coil, order must specify drawing number of relay for which coil is required.**	
7	Coil, bottom, for relay. **When ordering coil, order must specify drawing number of relay for which coil is required.**	
8	Block, for magnets	17745–19
9	Rectifier Complete, Type B ¼, for use with light-out relay	54728–62 Gr. 1



Type B, Biased-Neutral Relay



Type B, Size 1, Two-Rate Charge Control Relay

April 1951 GENERAL RAILWAY SIGNAL COMPANY

Type B, Size 1, Biased-Neutral and Two-Rate Charge Control Relay

NOTE: The detail parts shown on this plate are special for these relays. For all other detail parts for these relays see Plate E3121.

For registration parts and gasketing see Plate E3171.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Base Complete, for relay, includes tube for stud. **When ordering base, order must specify drawing number of relay for which base is required.**	
B	Contact Group, for relay, for details and order references see Plate E3143	56012
C	Armature Complete, for relay, includes top and bottom residual screws and all riveted parts. **When ordering armature, order must specify drawing number of relay for which armature is required.**	
D	Core and Bracket, for relay, includes residual pins and stud for spring Fig. 2. **When ordering core and bracket, order must specify drawing number of relay for which core and bracket are required.**	
1	Screw, No. 8-32 x 1″ fil. hd., for armature	1054–11
2	Spring, for setting back contacts. **When ordering spring, order must specify drawing number of relay for which spring is required.**	
3	Screw, No. 10-32 x ½″ fil. hd., with lock washer, for armature.	12563–1 53029–3
4	Screw, No. 10-32 x ¾″ fil. hd., for cores	6727–29
5	Core Complete, for biased-neutral relay	58966 Gr. 1
6	Coil, top, for relay. **When ordering coil, order must specify drawing number of relay for which coil is required.**	
7	Coil, bottom, for relay. **When ordering coil, order must specify drawing number of relay for which coil is required.**	
8	Nut, No. 8-32 elastic stop, for screw Fig. 1	42333–17
9	Leakage Strip, for biased-neutral relay	58898–4

(*Continued on following page*)

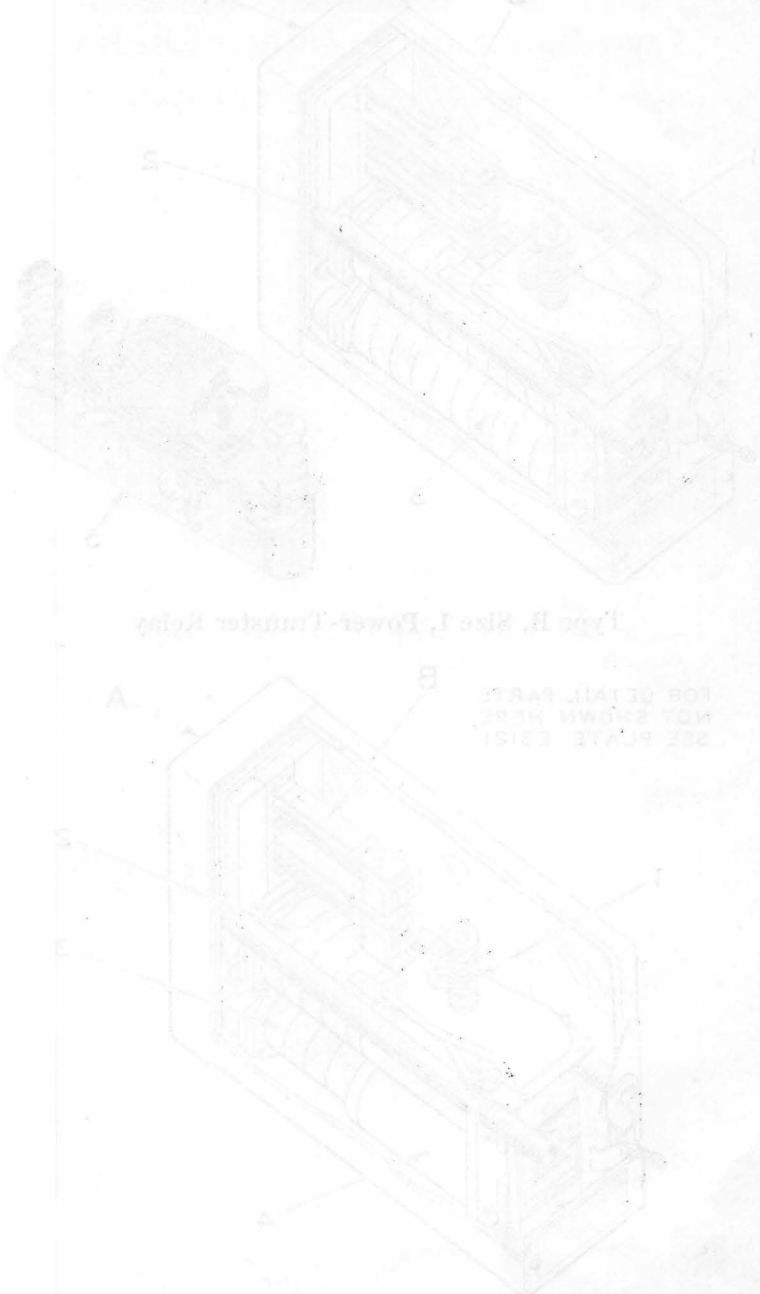
GENERAL RAILWAY SIGNAL COMPANY April 1951

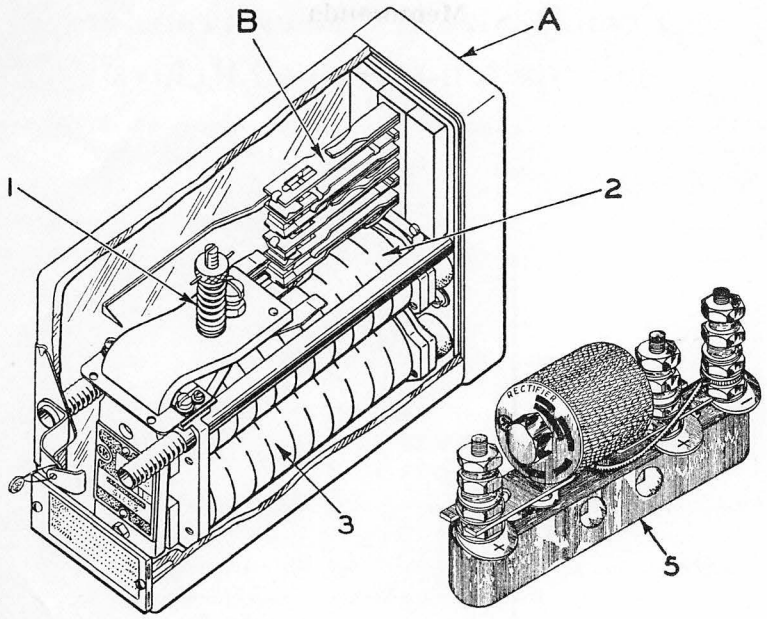
Type B, Size 1, Biased-Neutral and Two-Rate Charge Control Relay

Drawing references are shown for convenience in checking shipping lists and invoices.

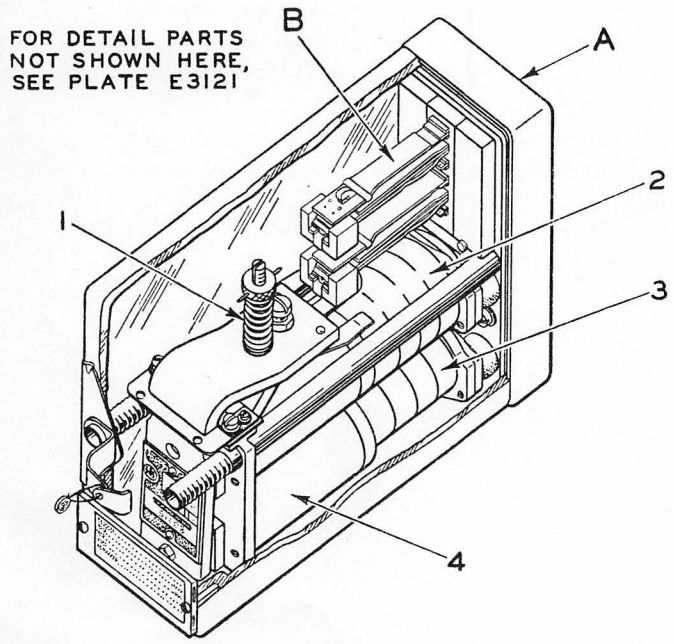
Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
10	Clamp, for magnets	58967
11	Magnet, only, for biased-neutral relay	53007–14
12	Cover, for opening to relay adjustment	57101 Gr. 1
13	Cover, only, for two-rate charge control relay	56029–25
14	Nut, ½″-32 hex., for fastening cover Fig. 12 to relay cover	6358–5
15	Nut, special, for adjusting relay	58485 Gr. 1
16	Form, for test data	51553–58
17	Resistor, only. **When ordering resistor, order must specify drawing number of relay for which resistor is required.**	57894–4
18	Nut, No. 10-32 hex., for insulator	577–12
19	Washer, for insulator	5046–5
20	Insulator, for relay	42792–12

Memoranda





Type B, Size 1, Power-Transfer Relay



Type B, Size 1, Switch-Overload Relay

April 1951 GENERAL RAILWAY SIGNAL COMPANY

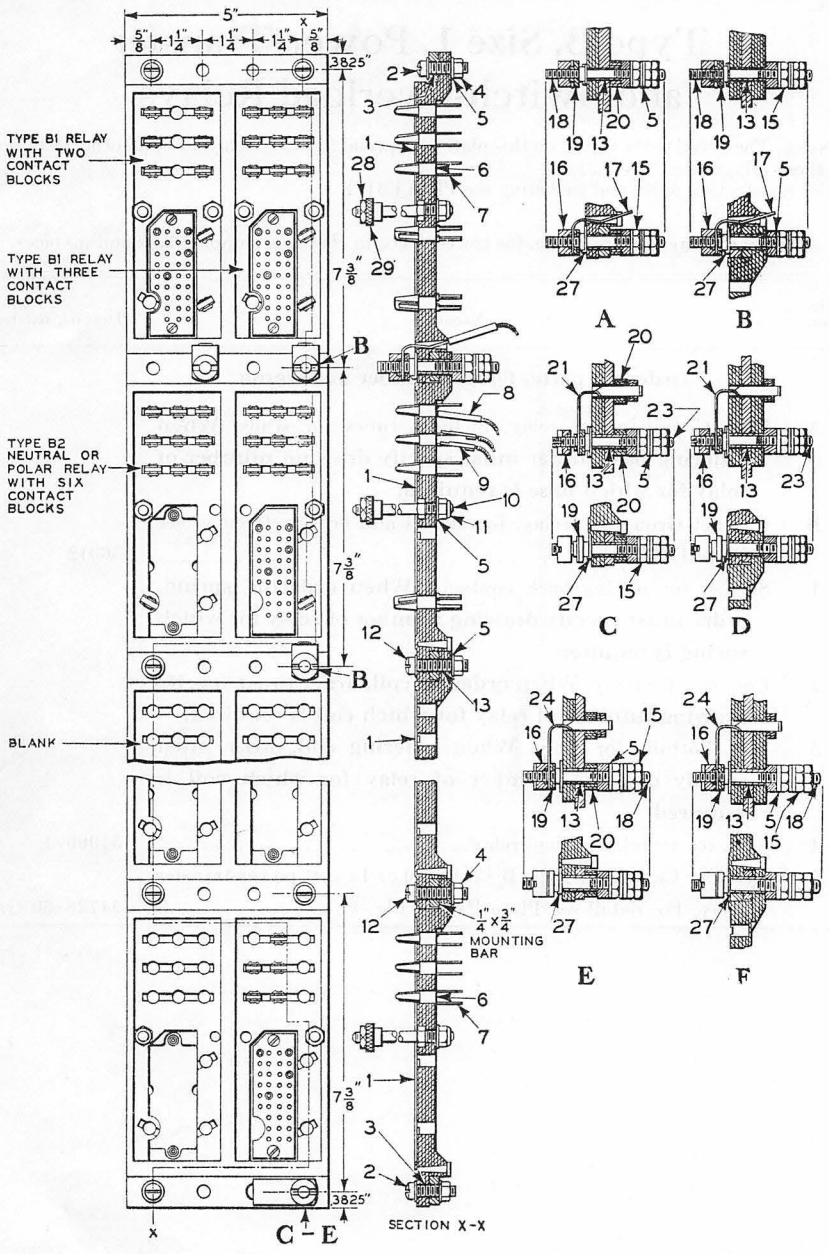
Type B, Size 1, Power-Transfer and Switch-Overload Relays

NOTE: The detail parts shown on this plate are special for these relays. For all other detail parts for these relays, see Plate E3121.
For registration parts and gasketing see Plate E3171.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Base Complete, for relay, includes tubes for studs. **When ordering base, order must specify drawing number of relay for which base is required.**	
B	Contact Group, for relay, for details and order references see Plate E3143	56012
1	Spring, for setting back contacts. **When ordering spring, order must specify drawing number of relay for which spring is required.**	
2	Coil, top, for relay. **When ordering coil, order must specify drawing number of relay for which coil is required.**	
3	Coil, bottom, for relay. **When ordering coil, order must specify drawing number of relay for which coil is required.**	
4	Slug, for switch-overload relay	54960–4
5	Rectifier Complete. Type B ¼, for 10 or 12 volt power-transfer relay. For detail see Plate P1793, Fig. F	54728–60 Gr. 1

PLATE E3135



TYPICAL PLUGBOARD ARRANGEMENT

Plugboard Details

For Repair Parts Only

Plugboard Details

For Repair Parts Only

For latest type Plugboards see Plate E3137.

NOTE: Plugboards are not furnished assembled except in factory wired relay racks or housings.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Plugboard Mounting and Test Terminal Complete, for opening coil circuit of d-c. relay when single plugboard is fastened to mounting bars	56046 Gr. 5
B	Plugboard Mounting and Test Terminal Complete, for opening coil circuit of d-c. relay when two plugboards are fastened to mounting bars	56046 Gr. 4
C	Plugboard Mounting and Test Terminal Complete, for shunting coil circuit of a-c. or d-c. relay when single plugboard is fastened to mounting bars	56046-2 Gr. 2
D	Plugboard Mounting and Test Terminal Complete, for shunting coil circuit of a-c. or d-c. relay when two plugboards are fastened to mounting bars	56046-2 Gr. 1
E	Plugboard Mounting and Test Terminal Complete, for opening coil circuit on a-c. relay (vane) when single plugboard is fastened to mounting bars	56046-1 Gr. 2
F	Plugboard Mounting and Test Terminal Complete, for opening coil circuit on a-c. relay (vane) when two plugboards are fastened to mounting bars	56046-1 Gr. 1
1	Plugboard, only. Does not include terminals, insulators, or mounting parts, which must be ordered separately. **When ordering plugboard, order must specify drawing number of relay for which plugboard is required.**	
2	Screw, $\frac{1}{4}$"-28 x 1" fil. hd., for fastening one plugboard to mounting bar	55470-3
3	Insulating Bushing, for screw Fig. 2	7350-128
4	Nut, $\frac{1}{4}$"-28 x $\frac{7}{32}$" th., hex., for screws Figs. 2 and 12	1472-4
5	Washer, for nuts Figs. 4, 11 and 15	1225-2
6	Insulator, for holding terminal Fig. 7 in position on plugboard.	55862-3

(*Continued on following page*)

GENERAL RAILWAY SIGNAL COMPANY April 1951

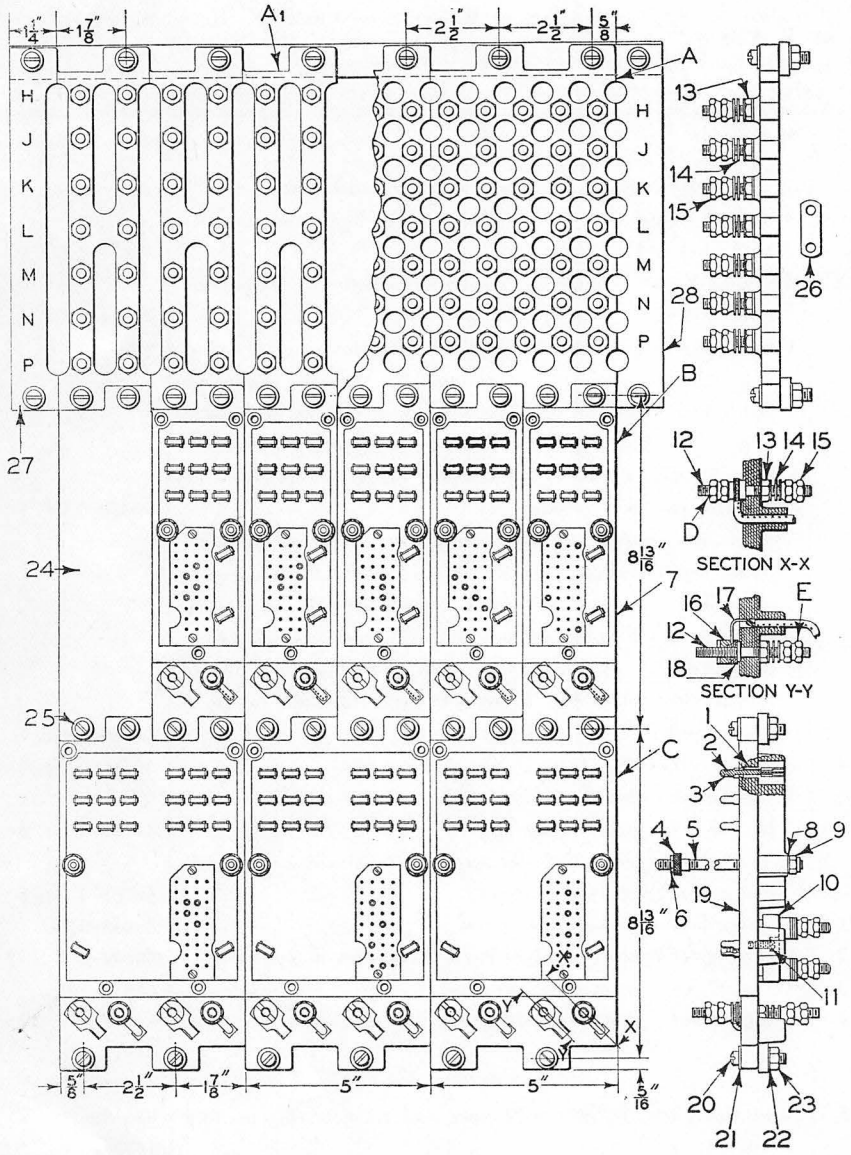
Plugboard Details

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
7	Terminal, as shown	55871–7
8	Sleeving, insulation for two (.115″ O.D.) wires on one terminal or one (.150″ O.D.) wire on one terminal	55557
8a	as above, except for two (.150″ O.D.) wires on one terminal	55557–2
8b	same as Fig. 8, except for two (.170″ O.D.) wires on one terminal	55557–4
9	Terminal, specify marking if required	55083–12
10	Stud Complete, ¼″-28, with nuts and washer, for holding relays to plugboard	43106–3 Gr. 1 42333–14 846–29 1472–8 1225–2
11	Nut, ¼″-28, elastic stop, for holding stud Fig. 10	42333–14
12	Screw, ¼″-28 x 1¼″ fil. hd., for fastening two plugboards to mounting bar	55470–5
13	Insulating Bushing, for screws Figs. 12, 18 and 23	6347–44
15	Nut, No. 14-24 x ⅛″ th., hex., for terminal posts	46989–2
16	Spanner Nut, No. 14-24, for use with connectors Figs. 17, 21 and 24 and bushing Fig. 19	578–15
17	Connector, for use with test terminals Figs. A and B	4906–75
18	Screw, No. 14–24, for test terminals Figs. A, B, E and F	374–5
19	Insulating Bushing, for use with connectors Figs. 17, 21 and 24 and nut Fig. 16	6347–31
20	Insulating Bushing, for use when one plugboard is fastened to mounting bar	7350–26
21	Connector, for use with test terminals Figs. C and D	4906–89
23	Screw, No. 14-24, for test terminals Figs. C and D	374–6
24	Connector, for test terminals Figs. E and F	4906–89
27	Lock Washer, for bushing Fig. 19	1601–126
28	Nut, ¼″-28 x ⅛″ th. hex., for locking nut Fig. 29	1472–8
29	Knurled Nut, ¼″-28, for holding relay to plugboard	846–29

Memoranda

PLATE E3137



Plugboard Details

Plugboard Details

NOTE—Plugboards are not furnished assembled except in factory wired relay racks or housings.

For application of Type B relays in Welded Steel Cases and Housings, see Volume 2, Section E, Part 9.

For individual relay mountings, see Plate E3139.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Terminal Board Complete, includes thirty-five terminal posts with nuts and washers	59681–1 Gr. 1
A1	Terminal Board Complete, with fourteen terminal posts, nuts and washers	59681–4 Gr. 1
B	Plugboard Complete, for Type B, Size 1 relay, includes clips Fig. 1; insulators Fig. 2; terminals Fig. 3; relay mounting studs with nuts and washers, Figs. 4, 5, 6, 8, 9; plugboard Fig. 7; test post Fig. E; mounting bolts, nuts and washers Figs. 20, 21, 22 & 23. If voltage post Fig. D is required same must be specified in order	59686–5 Gr. 1
C	Plugboard Complete, for all Type B, Size 2 relays except B2 Vane, includes clips Fig. 1; insulators Fig. 2; terminals Fig. 3; relay mounting studs with nuts and washers Figs. 4, 5, 6, 8, 9; plugboard Fig. 19, test post Fig. E; mounting bolts, nuts and washers Figs. 20, 21, 22 and 23. If voltage post Fig. D and terminal block Fig. 10 are required same must be specified on order	59686–7 Gr. 1
C1	as above, except for Type B, Size 2, Vane relay	59686–7 Gr. 2
D	Voltage Post Complete, includes screw, nuts, washers and eyelet, for taking coil voltage	42788–1 Gr. 2
E	Test Post Complete, includes screw, nuts, washers, and connector, for opening coil circuit	42788–1 Gr. 1
1	Clip, for holding insulator in place	38043–37
2	Insulator, for holding terminal Fig. 3 in position on plugboard	55862–8
3	Terminal, two required per insulator	55871–19
4	Knurled Nut, ¼″-28, for holding relay to plugboard	846–29 48813–6 42333–14
5	Stud Complete, ¼″-28, with nuts and washers, for holding relays to plugboards	846–29 1472–8 50587–2

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY June 1954

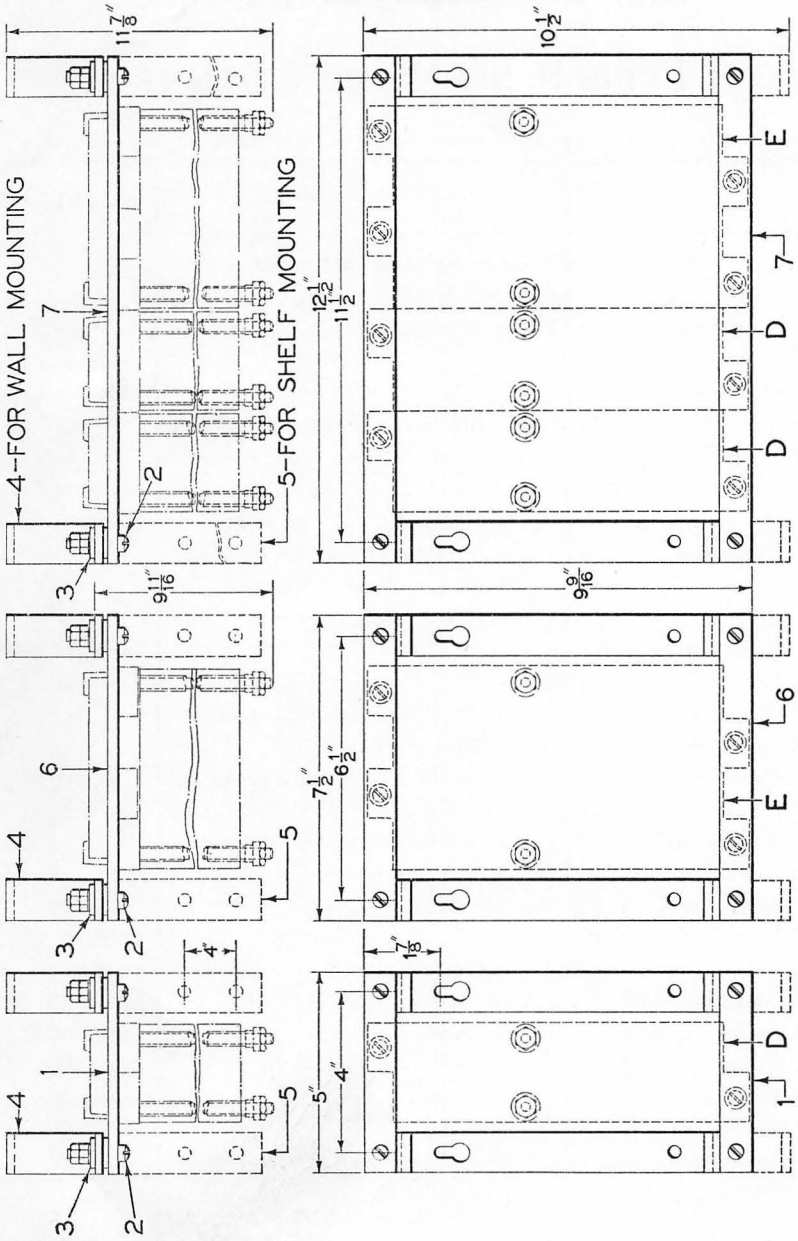
Plugboard Details

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
6	Nut, ¼″-28 hex., for locking nut Fig. 4	1472–8
7	Plugboard, only, for Type B, Size 1 relay, does not include terminals, insulators, test posts or mounting screws	56022–26
8	Washer, for nut Fig. 9	50587–2
9	Elastic Stop Nut, ¼″-28, for holding stud Fig. 5	42333–14
10	Terminal Block Complete	46048–53 Gr. 1
11	Screw, No. 8 x 9/16″ rd. hd., with lock washer, for mounting terminal block	56190–9 53029–21
12	Screw, No. 14-24, used as terminal post for test and voltage posts	374–5
13	Nut, No. 14-24 hex., for terminal posts	42839–5
14	Washer, for terminal posts	1225–2
15	Nut, No. 14-24 hex., for terminal posts	42843–1
16	Spanner Nut, No. 14-24, for terminals	578–15
17	Connector, for test terminals	4906–126
18	Insulating Bushing, for screws Fig. 12	6347–31
19	Plugboard, only, for all Type B, Size 2 relays, except Type B, Size 2 Vane, does not include terminals, insulators, test post or mounting screws	56022–21
19a	as above, except for Type B, Size 2 Vane relay	56022–23
20	Screw, ¼″-28 x 1¼″ fil. hd., for mounting plugboards	55470–22
21	Washer, for screw Fig. 20	19680–2
22	Lock Washer, for nut Fig. 23	0510–5
23	Nut, ¼″-28 hex., for screws Figs. 20 and 25	1472–11
24	Plate, filler for blank spaces	42812
25	Screw, ¼″-28 x ¾″ fil. hd., with hex. nut and lock washer, for filler plate	55470–3 1472–11 0510–5
26	Connector, 1″ centers	4906–20
27	Board, designation, two required per horizontal row of terminal boards Fig. A1. Specify lettering required	59683–8
28	Board, designation, two required per horizontal row of terminal boards Fig. A. Specify lettering required	59683

Memoranda

PLATE E3139



Individual Relay Mountings

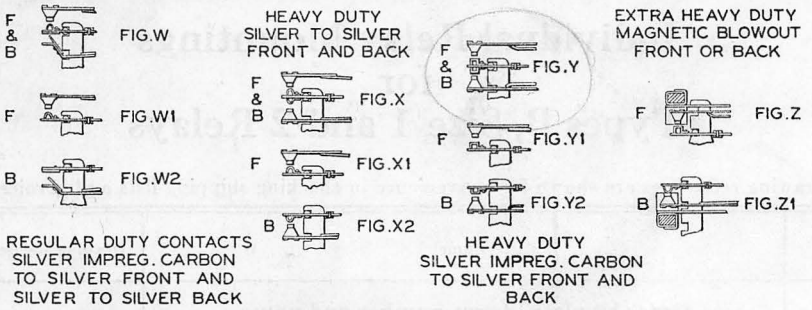
June 1954 GENERAL RAILWAY SIGNAL COMPANY

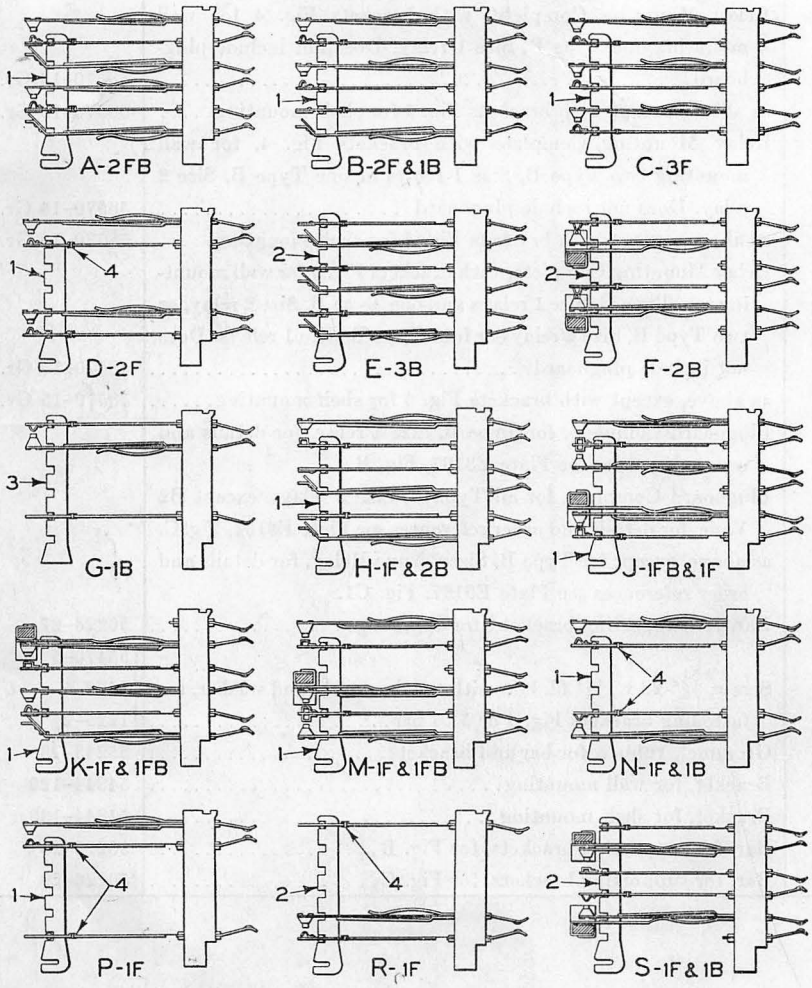
Individual Relay Mountings for Types B, Size 1 and 2 Relays

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Relay Mounting Complete, with brackets Fig. 4 for wall mounting one Type B, Size 1 relay. Does not include plugboard	58570–13 Gr. 1
A1	as above, except with brackets Fig. 5 for shelf mounting	58570–13 Gr. 2
B	Relay Mounting Complete with brackets Fig. 4, for wall mounting two Type B, Size 1 relays or one Type B, Size 2 relay. Does not include plugboard	58570–14 Gr. 1
B1	as above, except with brackets Fig. 5 for shelf mounting	58570–14 Gr. 2
C	Relay Mounting Complete, with brackets Fig. 4 for wall mounting two Type B, Size 1 relays and one Type B, Size 2 relay, or two Type B, Size 2 relays or four Type B, Size 1 relays. Does not include plugboard	58570–15 Gr. 1
C1	as above, except with brackets Fig. 5 for shelf mounting	58570–15 Gr. 2
D	Plugboard Complete, for Type B, Size 1 relay, for details and order references see Plate E3137, Fig. B.	
E	Plugboard Complete, for all Type B, Size 2 relays, except B2 Vane, for details and order references see Plate E3137, Fig. C.	
E1	as above, except for Type B, Size 2 Vane Relay, for details and order references see Plate E3137, Fig. C1.	
1	Bar, for supporting brackets, for Fig. A	56226–27
2	Screw, ¼″-28 x 1¼″ fil. hd., with two hex. nuts and washer, for fastening brackets Fig. 4 or 5 to bar	55470–5 1472–4 1225–2
3	Grommet, rubber, for bar and brackets	55243–13
4	Bracket, for wall mounting	54844–129
5	Bracket, for shelf mounting	54844–130
6	Bar, for supporting brackets, for Fig. B	56226–28
7	Bar, for supporting brackets, for Fig. C	56226–29

PLATE E3143





Contact Groups For Type B Relays

Contact Groups for Type B Relays

Fig. W—Illustrates REGULAR DUTY FRONT-BACK CONTACTS with silver impregnated carbon to silver front and silver to silver back.

Fig. W1—Illustrates REGULAR DUTY FRONT CONTACT with silver impregnated carbon to silver.

Fig. W2—Illustrates REGULAR DUTY BACK CONTACT with silver to silver.

Fig. X—Illustrates HEAVY DUTY FRONT-BACK CONTACTS with silver to silver front and backs.

Fig. X1—Illustrates HEAVY DUTY FRONT CONTACT with silver to silver.

Fig. X2—Illustrates HEAVY DUTY BACK CONTACT with silver to silver.

Fig. Y—Illustrates HEAVY DUTY FRONT-BACK CONTACTS with silver impregnated carbon to silver front and back.

Fig. Y1—Illustrates HEAVY DUTY FRONT CONTACT with silver impregnated carbon to silver.

Fig. Y2—Illustrates HEAVY DUTY BACK CONTACTS with silver impregnated carbon to silver.

Fig. Z—Illustrates EXTRA HEAVY DUTY FRONT CONTACT WITH MAGNETIC BLOWOUT with silver impregnated carbon to silver.

Fig. Z1—Illustrates EXTRA HEAVY DUTY BACK CONTACT WITH MAGNETIC BLOWOUT with silver to silver.

For additional description of the various types of contacts and their current carrying capacities see Handbook 33, Section III.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Contact Comb.	Contact Material		Drawing Reference
		Front	Back	
A	2FB	Reg. duty-Fig. W	Reg. duty-Fig. W	56012–6 Gr. 4
A1	2FB	Heavy duty-Fig. Y	Reg. duty-Fig. W	56012–6 Gr. 5
A2	2FB	Heavy duty-Fig. Y	Heavy duty-Fig. Y	56012–10 Gr. 3
A3	2FB	Heavy duty-Fig. X	Heavy duty-Fig. X	56012–10 Gr. 1
A4	2FB	Reg. duty-Fig. W Heavy duty-Fig. X	Reg. duty-Fig. W Heavy duty-Fig. X	56012–9 Gr. 2
B	2F and 1B	Reg. duty-Fig. W1	Reg. duty-Fig. W2	56012–3 Gr. 3
B1	2F and 1B	Heavy duty-Fig. Y1	Reg. duty-Fig. W2	56012–3 Gr. 4
B2	2F and 1B	Heavy duty-Fig. Y1	Heavy duty-Fig. Y2	56012–3 Gr. 6

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY June 1954

Contact Groups for Type B Relays

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Contact Comb.	Contact Material		Drawing Reference
		Front	Back	
C	3F	Reg. duty-Fig. W1	.....	56012–2 Gr. 1
C1	3F	Heavy duty-Fig. Y1	.....	56012–2 Gr. 4
C2	3F	Heavy duty-Fig. X1	.....	56012–2 Gr. 3
D	2F	Reg. duty-Fig. W1	.....	56012–16 Gr. 1
D1	2F	Heavy duty-Fig. X1	.....	56012–16 Gr. 2
D2	2F	Extra H. duty-Fig. Z	.....	56012–23 Gr. 1
E	3B	.....	Reg. duty-Fig. W2	56012–4 Gr. 2
*F	2B	.....	Extra H. duty-Fig. Z1	56012–26 Gr. 1
G	1B	.....	Heavy duty-Fig. X2	56012–32 Gr. 1
H	1F and 2B	Reg. duty-Fig. W1	Reg. duty-Fig. W2	56012–5 Gr. 4
H1	1F and 2B	Heavy duty-Fig. Y1	Reg. duty-Fig. W2	56012–5 Gr. 3
H2	1F and 2B	Heavy duty-Fig. X1	Reg. duty-Fig. W2	56012–5 Gr. 5
H3	1F and 2B	Heavy duty-Fig. Y1	Heavy duty-Fig. Y2	56012–5 Gr. 6
*J	1FB and 1F	Heavy duty-Fig. Y Extra H. duty-Fig. Z	Heavy duty-Fig. Y	56012–49 Gr. 1
*K	1F and 1FB	Extra H. duty-Fig. Z Reg. duty-Fig. W	Reg. duty-Fig. W	56012–47 Gr. 1
*M	1F and 1FB	Extra H. duty-Fig. Z Heavy duty-Fig. Y	Heavy duty-Fig. Y	56012–48 Gr. 1
N	1F and 1B	Reg. duty-Fig. W1	Reg. duty-Fig. W2	56012–27 Gr. 1
P	1F	Reg. duty-Fig. W1	.....	56012–21 Gr. 1
R	1F	Reg. duty-Fig. W1	.....	56012–11 Gr. 1
*S	1F and 1B	Extra H. duty-Fig. Z	Extra H. duty-Fig. Z1	56012–41 Gr. 1

***Magnets shipped separately and must be applied by customer.**

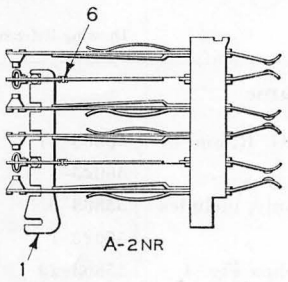
(Continued on following page)

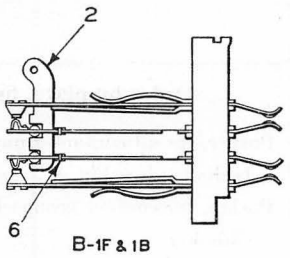
April 1951 GENERAL RAILWAY SIGNAL COMPANY

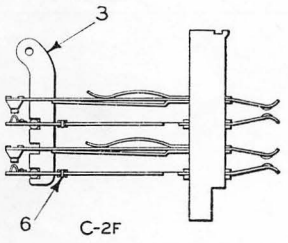
Contact Groups for Type B Relays

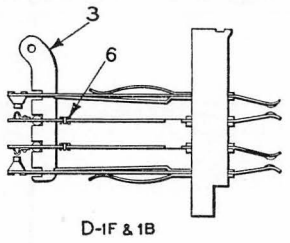
Drawing references are shown for convenience in checking shipping lists and invoices.

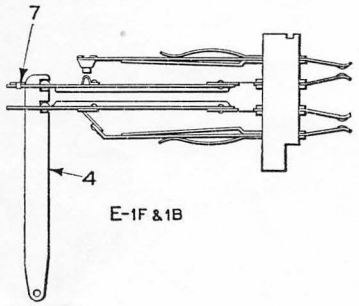
Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
1	Pusher, for all contact groups except Figs. E, F, G, R, and S.	55863–37
	Includes clips Fig. 4	56025–1
2	Pusher, for contact groups Figs. E, F, R, and S only, includes	55863–9
	clips Fig. 4	56025–1
3	Pusher, for contact group Fig. G only, includes clips Fig. 4	55863–29
		56025–1
4	Clip, for fastening pushers to fingers	56025–1

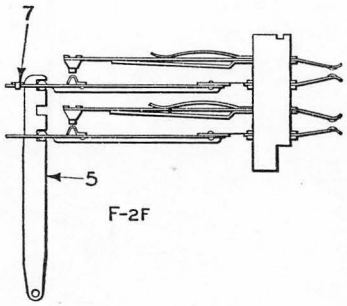












Contact Groups for Type B Polarized and Vane Relays

April 1951 GENERAL RAILWAY SIGNAL COMPANY

Contact Groups for Type B Polarized and Vane Relays

NOTE: For additional description of the various types of contacts and their current carrying capacities see Handbook 33, Section III.

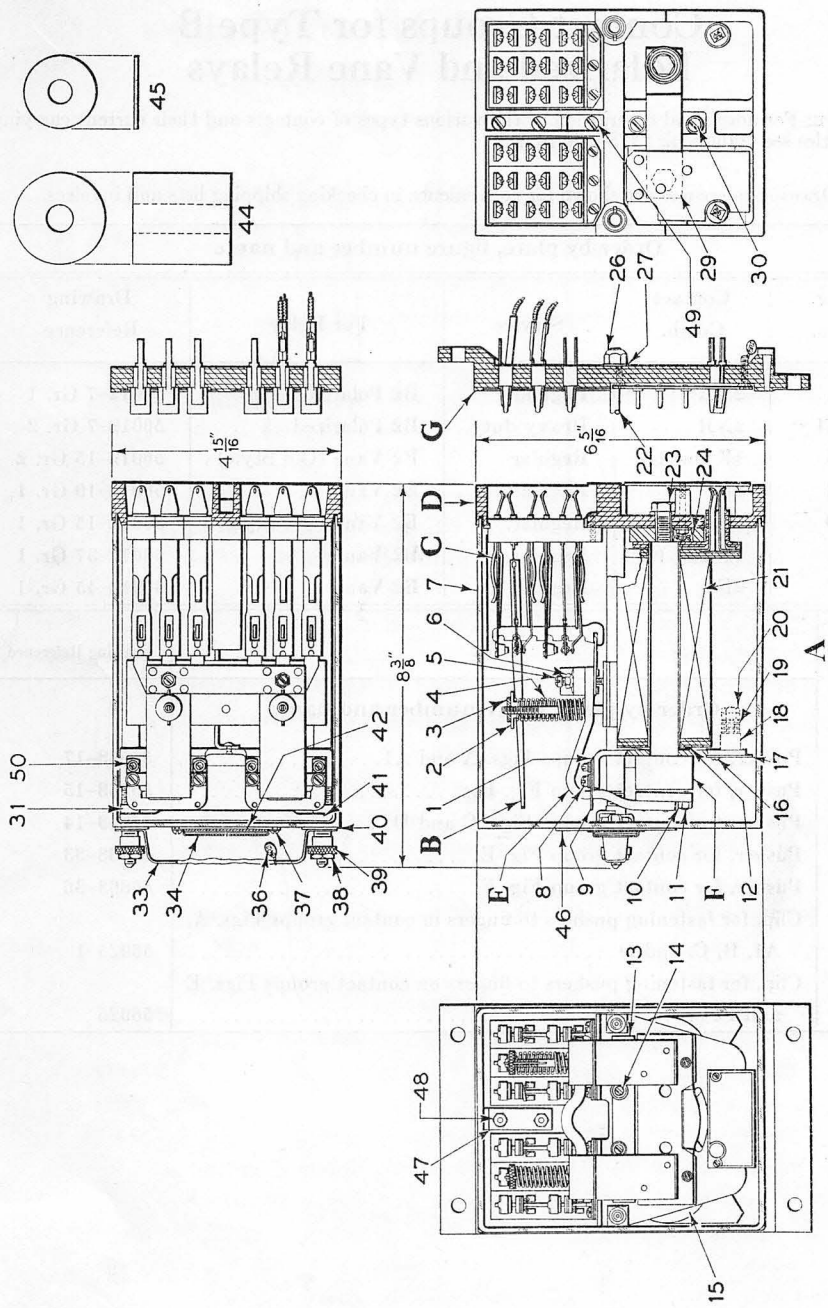
Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Contact Comb.	Service	For Relay	Drawing Reference
A	2NR	Regular	B2 Polarized	56012–7 Gr. 1
A1	2NR	Heavy duty	B2 Polarized	56012–7 Gr. 2
B	1F and 1B	Regular	B2 Vane (Old Style)	56012–15 Gr. 2
C	2F	Regular	B2 Vane	56012–19 Gr. 1
D	1F and 1B	Regular	B2 Vane (Old Style)	56012–15 Gr. 1
E	1F and 1B	Regular	B2 Vane	56012–37 Gr. 1
F	2F	Regular	B2 Vane	56012–45 Gr. 1

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
1	Pusher, for contact groups Figs. A and A1	55863–17
2	Pusher, for contact group Fig. B	55863–15
3	Pusher, for contact groups Figs. C and D	55863–14
4	Pusher, for contact group Fig. E	55863–33
5	Pusher, for contact group Fig. F	55863–36
6	Clip, for fastening pushers to fingers in contact groups Figs. A, A1, B, C, and D	56025–1
7	Clip, for fastening pushers to fingers on contact groups Figs. E and F	56025

PLATE E3151



Type B, Size 2, Neutral Relays

April 1951 GENERAL RAILWAY SIGNAL COMPANY

Type B, Size 2, Neutral Relays

For Repair Parts Only

NOTE: For registration parts and gasketing see Plate E3171.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Type B2 Neutral Relay Complete, as shown. **When ordering a replacement relay, order must specify ordering reference of relay found on the name plate on relay armature** (for example 56002–85 Gr. 1)	56002
B	Indicator Complete, for indicating position of contacts, includes clips for attaching to fingers. **When ordering indicator, order must specify drawing number of relay for which indicator is required**	56141
C	Contact Group, for relay. For details and order references see Plate E3143	56012
D	Base Complete, for relay, includes tube for stud Fig. 22. **When ordering base, order must specify drawing number of relay for which base is required.**	
E	Armature Complete, for relay, includes top and bottom residual screws and riveted parts. **When ordering armature, order must specify drawing number of relay for which armature is required.**	
F	Cores and Brackets, for relay, includes residual pins and studs for springs Fig. 4. **When ordering cores and brackets, order must specify drawing number of relay for which cores and brackets are required.**	
G	Plugboard. For details and order references see Plate E3135.	
1	Plate, armature bearing	55912–2
2	Lock, for nut Fig. 3	56024
3	Nut, No. 10-32 rd., knurled, for stud on bracket	846–23
4	Spring, for setting back contacts. **When ordering spring, order must specify drawing number of relay for which spring is required.**	
5	Screw, No. 8-32 x 7/8" fil. hd., for armature	1054–5

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY April 1951

Type B, Size 2, Neutral Relays
For Repair Parts Only

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
6	Nut, No. 8-32, elastic stop, for screw Fig. 5	42333–17
7	Cover Complete, with bar and screws, for relay	57287–2 Gr. 1
8	Screw, No. 8-32 x 5/16″ fil. hd., with washer and lock washer, for fastening armature plates to bracket	55160–26 22543–21 53029–21
9	Plate, armature retaining	55914–2
10	Nut, No. 6-40 x 1/8″ th., hex., for screw Fig. 11	3614–3
11	Screw, residual, No. 6-40 x 3/8″ lg., for armature	55968
12	Spring Washer, to hold coils tight on core	1225–105
13	Shunt Strip, for slow pick-up relay	17378–16
14	Screw, No. 8-32 x 7/16″ fil. hd., with washers, for shunt strip	55160–28 2534–1 53029–21
15	Coil, left hand, for relay. **When ordering coil, order must specify drawing number of relay for which coil is required.**	
16	Screw, No. 2-56 x 3/16″ rd. hd., for fastening name plate to bracket	55219–3
17	Name Plate, for relay	401–194
18	Insulator, for use when double or triple wound coils are used	42792–12
19	Washer, for nut Fig. 20	5046–5
20	Nut, No. 10-32 x 1/8″ th., hex., for insulator	577–12
21	Coil, right hand, for relay. **When ordering coil, order must specify drawing number of relay for which coil is required.**	43106–3 Gr. 1
22	Stud Complete, 1/4″-28 with nuts and washer, for holding relays to plugboard	42333–14 846–29 1472–8 1225–2
23	Screw, 5/16″-24 x 1 1/8″ hex. hd., with lock washer, for fastening cores and yokes to relay base	3440–21 53029–25

(Continued on following page)

April 1951 GENERAL RAILWAY SIGNAL COMPANY

Type B, Size 2, Neutral Relays

For Repair Parts Only

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
24	Yoke, for cores. **When ordering yoke, order must specify drawing number of relay for which yoke is required.**	
26	Nut, 1/4″-28, elastic stop, for holding stud Fig. 22	42333-14
27	Washer, for nut Fig. 26	1225-2
29	Yoke Complete, for relay. **When ordering yoke, order must specify drawing number of relay for which yoke is required.**	
30	Screw, No. 8-32 x 7/8″ fil. hd., with sq. nut, washer and lock washer, for yoke Fig. 29	55160-29 15250-2 2534-1 53029-21
31	Nut, 3/8″-32 x 3/16″ th., sq., for bar Fig. 41	42835-11
33	Nut, for holding and sealing cover Fig. 7 in place	56026-1
34	Holder, for test data form	50023-17
36	Seal, for relay	35285
37	Screw, No. 4-40 x 1/4″ rd. hd., for holder Fig. 34	56190-4
37a	as above, except 5/16″ long	56190-7
38	Nut, 1/4″-28 x 1/8″ th., hex., for locking nut Fig. 39 in place	1472-8
39	Knurled Nut, 1/4″-28, for holding relay to plugboard	846-29
40	Spring, follow-up for nut Fig. 33	16111-63
41	Bar, for cover	56668
42	Form, for test data	51553-37
44	Slug, half length, for slow-acting relays	54960-8
44a	as above, except full length	54960-7
45	Washer, for slow-acting relays	1225-98
46	Tag, blank, for circuit designation of relay	15311-5
47	Brace, for cover Fig. 7	1482-24
48	Screw, No. 10-32 x 5/8″ fil. hd., with hex. nut and lock washer, for brace Fig. 47	12563-3 40796 53029-3

(*Continued on following page*)

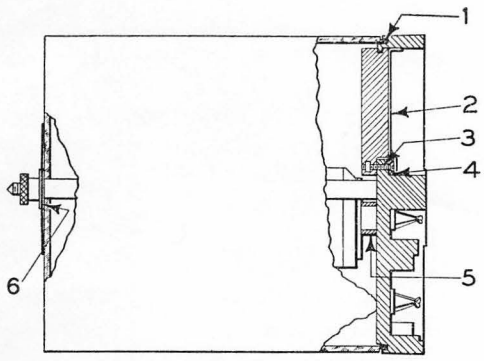
GENERAL RAILWAY SIGNAL COMPANY April 1951

Type B, Size 2, Neutral Relays
For Repair Parts Only

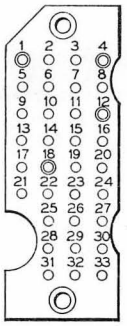
Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
49	Screw, No. 10-32 x $\frac{15}{16}$" rd. hd., for filling rear polar trunnion screw hole before sealing	2438–10
50	Screw, No. 4-40 x $\frac{1}{4}$" fil. hd., with lock washer, for armature bearing plate Fig. 1	55227–5 53029–27
50a	as above, except dowel pin	504–313

Memoranda

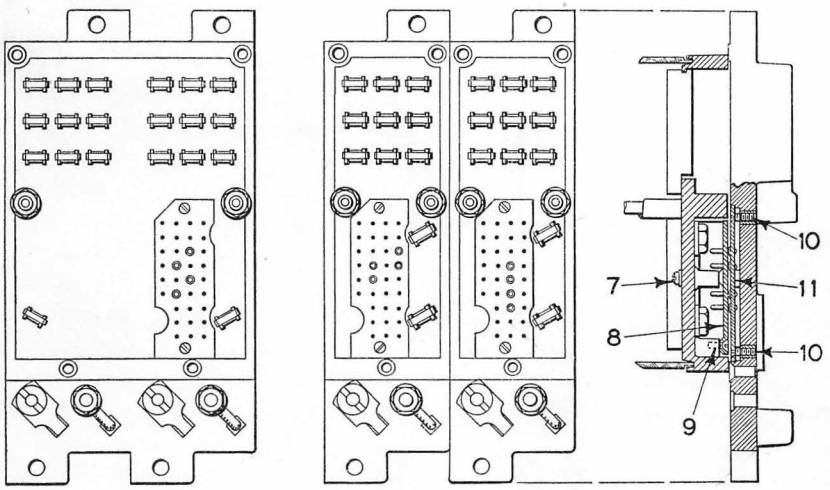


GASKETING FOR TYPE B RELAYS



8

ONE TYPE B2 TWO TYPE B1



Registration For Type B Relays

Gasketing and Registration For Type B Relays

Gasketing and Registration For Type B Relays

NOTE: Registration plates and gaskets as shown on opposite page cannot be applied to relays which were not previously equipped with them.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
1	Gasket, for cover of Type B Size 1 relays	13014–221
1a	as above, except for cover of Type B Size 2 relays	13014–222
2	Gasket, for back of contact blocks, for all relays except Type B2 Vane	13014–223
2a	as above, except for left hand side of Type B2 Vane	13014–279
2b	same as Fig. 2, except for right hand side of Type B2 Vane	13014–280
3	Screw, No. 6-40 x $\frac{5}{8}$″ fl. hd., for plate Fig. 4	369–2
3a	as above, except $\frac{1}{2}$″ long, for Types B1 and B2 relays having metal base	369–1
4	Plate, for contact blocks, for Types B1 and B2 relays having bakelite base	35845–110
5	Gasket, for coils of Type B Sizes 1 and 2 neutral and retained-neutral polarized relays	30646–5
6	Gasket, for front of cover	30646–12
7	Screw, No. 8-32 x $\frac{15}{16}$″ fil. hd., for fastening plate Fig. 8 to base of Type B Size 1 relay	55160–35
7a	as above except No. 8-32 x $1\frac{3}{16}$″ fl. hd. with hex. nut, and cotter pin, for fastening plate Fig. 8 to base of Type B Size 2 relays	18746–22 3891–1 51026–5
8	Registration Plate, for relay. **When ordering plate, order must specify drawing number of relay for which plate is required.**	
9	Screw, No. 6-32 x $\frac{3}{8}$″ fl. hd., for fastening plate Fig. 8 to relay base	4909–33
10	Screw, No. 6-32 x $\frac{1}{2}$″ fl. hd., for fastening plate Fig. 11 to plug-board	4909–31
11	Registration Plate with studs, for plugboard. **When ordering plate, order must specify drawing number of relay for which plate is required.**	

Memoranda

Section E, Part 29

Type N
Vane Relays

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Type N Vane Relay

Foreword

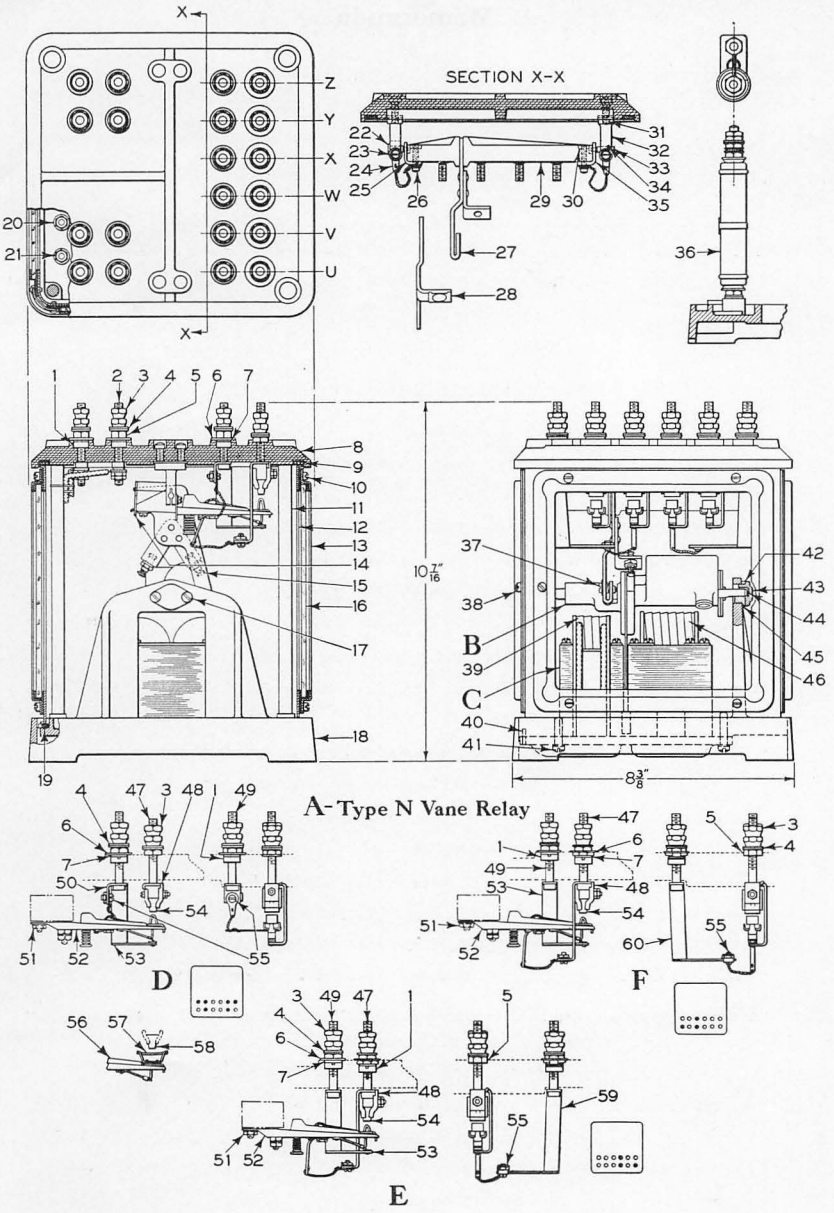
The Type N Vane Relays were designed primarily as high-efficiency a-c. track relays requiring low energy for operation and are adaptable to all types of track circuits. Two well known G-R-S developments were incorporated; the articulated contact fingers used in Type K Relays and the knife-edge bearings featured in the Type SA Signal.

Although as stated above, these relays were designed primarily for track relays, they may be used as line relays, the coils of the actuating element being supplied to suit the application of the relay.

A link drive transmits the movement of the vane shaft to the contact block which is supported by trunnions. The articulated contact fingers, which are mounted on the block, close and open the relayed circuits through stationary contacts assembled to the relay top, which is also the terminal block. Glass windows allow inspection of the air-gap and all moving parts.

Memoranda

PLATE E2903



Type N Vane Relay
Two Position

June 1938 GENERAL RAILWAY SIGNAL COMPANY

Type N Vane Relay

Two Position

NOTE: Relays listed below are arranged for maximum contact combination of four dependent front and back contacts.

Relays are furnished having universal contacts which are suitable for breaking high or low voltages (1st and 2nd range).

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Type N Vane Relay Complete, with link drive, two position, for line or track circuits. Specify voltage and frequency upon which relay is to operate. A short description of the application of the relay is essential to provide all the required information on the windings. Unless otherwise specified, relay will be furnished with contact groups in the following spaces: Fig. D—spaces U-V and Y-Z; Fig. E—spaces X-Z and Fig. F—spaces U-W	55100–4
B	Vane Complete, includes all parts for installing in relay. For 25 cycle relays with link drive	51507–6 Gr. 2
B1	as above, except for 60 cycle relays	51507–6 Gr. 3
C	Stator Complete, includes all parts for installing in relay. When ordering repair parts, see tag on coils to be replaced and give data shown thereon	51510–3 Gr. 1
D	Contact Group Complete, as shown, for use as dependent front and back; has universal contacts. Includes all parts for adding or replacing contact group. For use in spaces U and V or Y and Z	55110 Gr. 2
E	Contact Group Complete, as shown, for use as dependent front and back; has universal contacts. Includes all parts for adding or replacing contact group. For use in spaces X and Z	55110–2 Gr. 2
F	Contact Group Complete, as shown, for use as dependent front and back; has universal contacts. Includes all parts for adding or replacing contact group. For use in spaces U and W	55110–1 Gr. 2
1	Spanner Nut, No. 14-24, for terminal posts	42840–5
2	Screw, No. 14-24, terminal for stator coils	376–4
3	Nut, No. 14-24 x $\frac{5}{16}$″ hex., for terminal posts	42843–1
4	Washer, for terminal posts	1225–2

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY June 1938

Type N Vane Relay

Two Position

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
5	Nut, No. 14-24 x 1/8" hex., for terminal posts	46989–2
6	Washer, for terminal posts	1225–78
7	Lead Washer, for terminal posts	1533–41
8	Cover, for relay	29511–53
9	Gasket, for cover	13014–113
10	Screw, No. 8-32 x 1/4" fil. hd., for fastening ring to relay frame	28989–15
11	Post, for holding cover to relay	52285–9
12	Frame Complete, for relay	55111 Gr. 1
13	Ring Complete, includes glass and gasket, for relay	51526–1 Gr. 1
14	Spring, for link	16111–48
15	Stop Complete, includes spring, stud, nut and washer	55620 Gr. 3 53084–1 53029–2
16	Glass, only, for ring	50538–61
17	Screw, No. 8-32 x 13/32" for fastening bearing to frame	53829–2
18	Base, for relay	51538–1
19	Gasket, for base	13014–116
20	Insulated Stud, binding post for coil leads	42792–5
21	Nut, No. 10-32 x 1/8" hex., with washer, for resistance unit	40796 5046–5
22	Trunnion, for support, Fig. 29	35269–7
23	Screw, No. 8-32 x 3/8" fil. hd., with washers, for fastening connectors and trunnion to brackets Figs. 25 and 35	28989–3 53029–4 2534–2
24	Connector Complete, ground shunt around trunnion	42760–1 Gr. 14
25	Bracket, left hand, for support Fig. 29	40618–5
26	Screw, No. 6-32 x 5/8" fil. hd., with washers, for fastening bracket and connector to support Fig. 29	3931–12 53029–1 1225–4

(*Continued on following page*)

Type N Vane Relay

Two Position

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
27	Stop Complete, for relay with link drive	55115–2 Gr. 1
28	Stop Complete, for relay with jaw and roller drive	55115 Gr. 1
29	Support Complete, includes studs for relay fingers	51537–9
30	Nut, No. 6-32 x $\frac{3}{32}$″ hex., for screw Fig. 26	37404–1
31	Screw, No. 10-32 x $\frac{5}{8}$″ fil. hd., for fastening bracket Fig. 32 to cover	12563–3
32	Bracket, for supporting trunnions Figs. 22 and 33	30319–4
33	Trunnion, as shown, for support Fig. 29	35269–8
34	Escutcheon Pin, No. 16 x $\frac{1}{2}$″ for fastening trunnion Fig. 33 to bracket	0677–2
35	Bracket, right hand, for support Fig. 29	40618–4
36	Resistance Unit, only, specify resistance	43286–1
37	Bearing Screw, for link	53829–4
38	Screw, No. 8-32 x $\frac{1}{4}$″ fil. hd., with hole in head for car seal	28989–31
39	Line or Track Coil, for relay. See tag on coil to be replaced and give data, otherwise specify voltage and frequency on which relay is to operate, and if used in track circuit, specify type of circuit	51522–25
40	Dowel Pin, $\frac{1}{8}$″ x $\frac{7}{16}$″, for fastening stator to frame	28339
41	Screw, No. 14-24 x 1″ fil. hd., with lock washer, for fastening stator to frame	0504–4 53029–2
42	Bearing, for vane shaft	53828–1
43	Bearing, for vane shaft	53828
44	Ball, thrust for end of vane shaft	36126–4
45	Shim, .003″ th., for bearing, to adjust end play of vane shaft	53879–1
45a	as above, except .005″ th	53879
46	Local Coil, for relay. See tag on coil to be replaced and give data, otherwise specify voltage and frequency on which relay is to operate	51522–18
47	Screw, No. 14-24, for front contacts	38275–16

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY June 1938

Type N Vane Relay

Two Position

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
48	Holder Complete, includes screw and nuts, for front contact	53018 53018–1 3931–4 37404–1
49	Screw, No. 14-24 x 2⅛″ sq. hd., for terminals Figs. 50, 59 and 60	350–8
50	Terminal, short, for contact group Fig. D	51559–39
51	Nut, No. 10-32 x ⅛″ hex., with lock washer, for finger	577–12 53029–3
52	Finger Complete, articulated, has silver contacts	53011–2 Gr. 1
53	Back Contact Support, for finger	51320–5 Gr. 1
54	Front Contact, universal, for relay, for use with finger Fig. 52	13026–17
55	Screw, No. 6-32 x ¼″ fil. hd., with nut and lock washer, for fastening finger connector to terminal	3931–6 3614–1 50616–4
56	Finger Complete, articulated, has removable silver gauze front contact strip and silver back contact	53011 Gr. 1
57	Contact Strip, silver gauze, for finger Fig. 56	53012–1 Gr. 1
58	Front Contact, carbon, for use with finger Fig. 56	13026–6
59	Terminal, long, as shown, for contact group Fig. E	51559–7
60	Terminal, long, as shown, for contact group Fig. F	51559–8

Section E, Part 28

Type L
Vane Relays

Supersedes Section E, Part 28, dated February 1931

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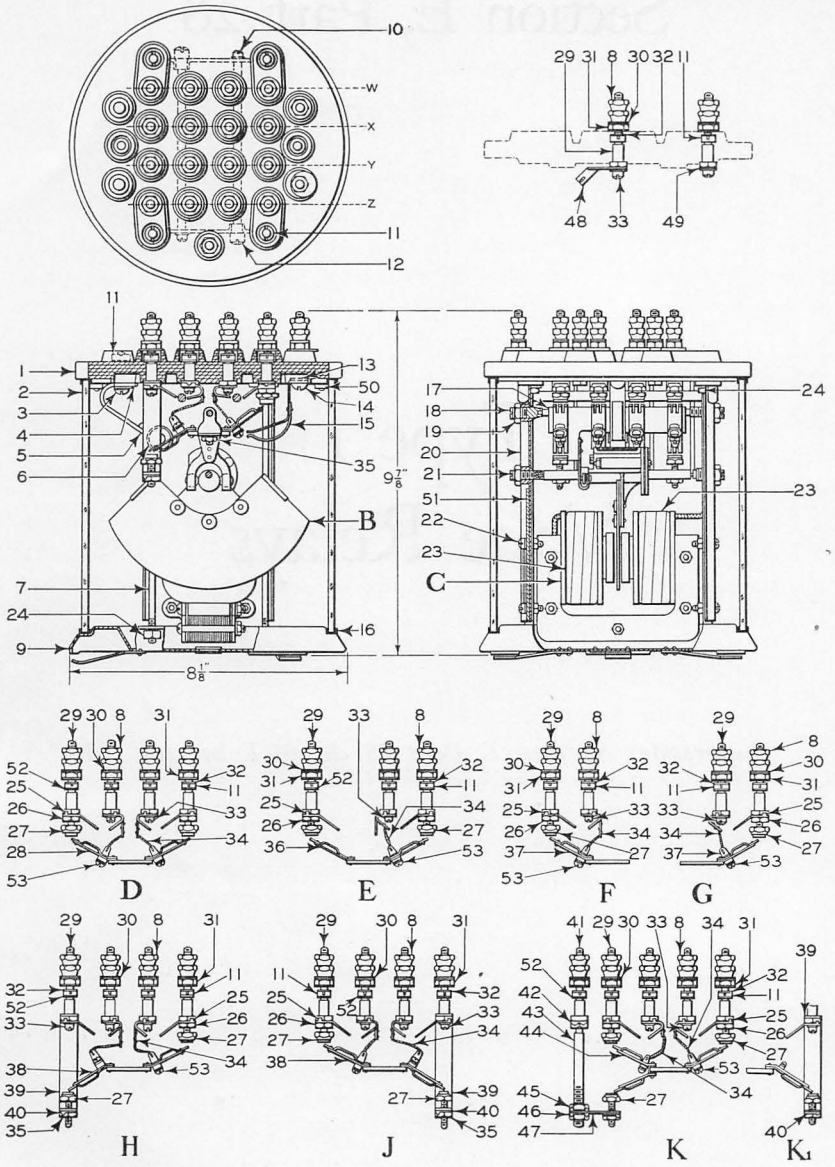
PLATE E2801



Type L Vane Relay
Single Element—Two Position
For Repair Parts Only

June 1938 GENERAL RAILWAY SIGNAL COMPANY

Type L Vane Relay

Single Element—Two Position

Size 4 Class A

For Repair Parts Only

NOTE: For latest Vane Relays, see Plates E2807 and E2809.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
B	Vane Complete, as shown, includes all parts for installing in relay. For relays with not more than two back contacts	51507–4 Gr. 1
B1	as above, except for relays with not more than four back contacts	51507–4 Gr. 2
B2	same as Fig. B, except for relays with not more than six back contacts.	51507–4 Gr. 3
C	Magnet Complete, as shown, includes all parts for installing in relay. When ordering repair parts, see tag on coils of magnet to be replaced and give data	51508–4 Gr. 1
D	Contact Group Complete, as shown, for use as independent front and back; has universal contacts. Includes all parts for adding or replacing contact group. For use in spaces W, X, Y or Z	51512–9 Gr. 7
E	Contact Group Complete, as shown, for use as dependent front and back; has universal contacts. Includes all parts for adding or replacing contact group. For use in spaces W, X, Y or Z	51512–19 Gr. 7
F	Contact Group Complete, as shown, for use as independent back; has universal contacts. Includes all parts for adding or replacing contact group. For use in spaces W, X, Y or Z	51512–12 Gr. 3
G	Contact Group Complete, as shown, for use as independent front; has universal contacts. Includes all parts for adding or replacing contact group. For use in spaces W, X, Y or Z	51512–13 Gr. 3
H	Contact Group Complete, as shown, for use as two independent front; has universal contacts. Includes all parts for adding or replacing contact group. For use in spaces W or Z	51512–10 Gr. 3
J	Contact Group Complete, as shown, for use as two independent back; has universal contacts. Includes all parts for adding or replacing contact group. For use in spaces W or Z	51512–11 Gr. 3

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY June 1938

Type L Vane Relay

Single Element—Two Position

Size 4 Class A

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
K	Contact Group Complete, as shown, for use as one dependent front and back, and one independent front; has universal contacts. Includes all parts for adding or replacing contact group. For use in spaces W or Z	51512–18 Gr. 1
K1	as above, except for use as one dependent front and back, and one independent back. For use in spaces W or Z	51512–18 Gr. 2
1	Cover, as shown, for relay	29511–33
2	Glass Case, for housing relay mechanism	13031–4
3	Screw, No. 14-24 x 1″ rd. hd., with lock washer for fastening stop, Fig. 5 to cover	50651–1 53029–8
4	Filler and Washer, for stop, Fig. 5	53771 1601–25
5	Stop Complete, back, for vane	51530–2 Gr. 1
6	Roller, only, for stop, Fig. 5	31942–15
7	Stud, No. 14-24 x 8⅝″ for fastening cover and glass case to base	980–12
8	Nut, No. 14-24 x $\frac{5}{16}$″ hex., for terminal posts	42843–1
9	Base Complete, as shown, for relay	51534 Gr. 1
10	Screw, No. 10-32 x ½″ fil. hd., for screw, Fig. 12, includes washer	12563–1 53029–3
11	Nut, No. 14-24 spanner, for stud, Fig. 7 and terminal posts	42840–3
12	Screw, $\frac{5}{16}$″-24 x 4$\frac{13}{16}$″ fil. hd., for fastening supports, Fig. 20 in place	49522–6
13	Washer, for screw, Fig. 14	1601–52
14	Screw, No. 14-24 x ¾″ rd. hd., for fastening stop, Fig. 15 to cover	0523–1
15	Stop Complete, front, for vane	51530–3 Gr. 1
15a	Stop Complete, front, for vane. Includes shim block and screw, for attaching new type stop, as shown on Plate E2807, Fig. 17 to old type relays	51530–7 Gr. 1 54263–5 1411–9
16	Gasket, for glass case	13014–55

(*Continued on following page*)

June 1938 GENERAL RAILWAY SIGNAL COMPANY

Type L Vane Relay

Single Element—Two Position

Size 4 Class A

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
17	Contact Support Complete, as shown, for relay	51537 Gr. 1
18	Screw, bearing for support, Fig. 17	43346-7
19	Nut, $\frac{5}{16}$"-32 hex., for screw bearings, Figs. 18 and 21	12578-2
20	Support Complete, as shown, for supporting relay mechanism, includes hub for bearing	51539 Gr. 1
21	Bearing Complete, Jewel, as shown, for vane	51527-1 Gr. 1
22	Screw, No. 10-32 x $\frac{1}{2}$" fil. hd., with hex. nut and lock washer for fastening magnet to support	12563-1 40796 53029-7
23	Coil, for relay. See tag on coil to be replaced and give data, otherwise specify voltage and frequency upon which relay is to operate, and if used in track circuit specify type of circuit	51522-9
24	Nut, No. 14-24 x $\frac{3}{16}$" hex., for locking screw, Fig. 7, to cover	42839-5
25	Lock Washer, for nut, Fig. 26	1601-35
26	Nut, No. 10-32 hex., for locking contact, Fig. 27 to terminal post	577-2
27	Contact Complete, as shown, universal, for contact groups	42799-7 Gr. 8
27a	as above, except graphite	42799-7 Gr. 7
28	Finger Complete, as shown, has silver contacts riveted on insulation. For contact group, Fig. D	51528-15 Gr. 1
28a	as above, except has graphite contacts	51528-16 Gr. 1
29	Stud, No. 14-24 x $2\frac{1}{16}$" hex. hd., used as terminal post for contact groups, Figs. D, E, F, G, H, J, K and K1	380-4
30	Washer, for terminal post	1225-2
31	Nut, No. 14-24 x $\frac{3}{16}$" hex., for terminal post	42839-5
32	Washer, lead, for terminal post	1533-33
33	Screw, No. 10-32 x $\frac{3}{8}$" fil. hd., with lock washer, for fastening connector, Fig. 34 to terminal post	12563-22 53029-3
34	Connector Complete, as shown, for contact fingers	42760-24 Gr. 1

(*Continued on following page*)

GENERAL RAILWAY SIGNAL COMPANY June 1938

Type L Vane Relay

Single Element—Two Position

Size 4 Class A

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
35	Nut, No. 10-32 hex., includes lock washer, for fastening contact group to support, Fig. 17. Also for fastening contact, Fig. 27 to support, Fig. 39	40796 53029–3
36	Finger Complete, as shown, has silver contacts riveted on insulation. For contact group, Fig. E	51528–19 Gr. 1
36a	as above, except has graphite contacts	51528–19 Gr. 2
37	Finger Complete, as shown, has silver contact riveted on insulation. For contact groups, Figs. F and G	51528–18 Gr. 1
37a	as above, except has graphite contact	51528–18 Gr. 2
38	Finger Complete, as shown, has silver contacts riveted on insulation. For contact groups, Figs. H and J	51528–17 Gr. 1
38a	as above, except has graphite contacts	51528–17 Gr. 2
39	Support, as shown, for supporting contact, for Figs. H, J and K1	35921–21
40	Lock Washer, for nut, Fig. 35, for Figs. H, J and K1	1601–49
41	Stud, No. 14-24, sq. hd., used as terminal post for contact, as shown, for use with contact groups, Figs. K and K1	380–1
42	Lock Washer, for stud, Fig. 41	53029–3
43	Stud, as shown, for supporting contact, for Figs. K and K1	980–24
44	Finger Complete as shown, has silver contacts riveted on insulation. Has one dependent front and back contact and one independent front contact. For contact group, Fig. K	51528–21 Gr. 1
44a	as above, except has one dependent front and back contact and one independent back contact. For contact group, Fig. K1	51528–21 Gr. 2
45	Nut, No. 14-24 x $\frac{1}{8}$″ hex., for stud, Fig. 41	46989–2
46	Lock Washer, for nut, Fig. 45	1601–62
47	Support, as shown, for contact	35921–52
48	Ground Strip, as shown, for connecting frame to ground post	17378–9
49	Washer, $\frac{13}{64}$″ I. D. x $\frac{13}{32}$″ O. D. for terminal post	5046–5

(*Continued on following page*)

June 1938 GENERAL RAILWAY SIGNAL COMPANY

Type L Vane Relay

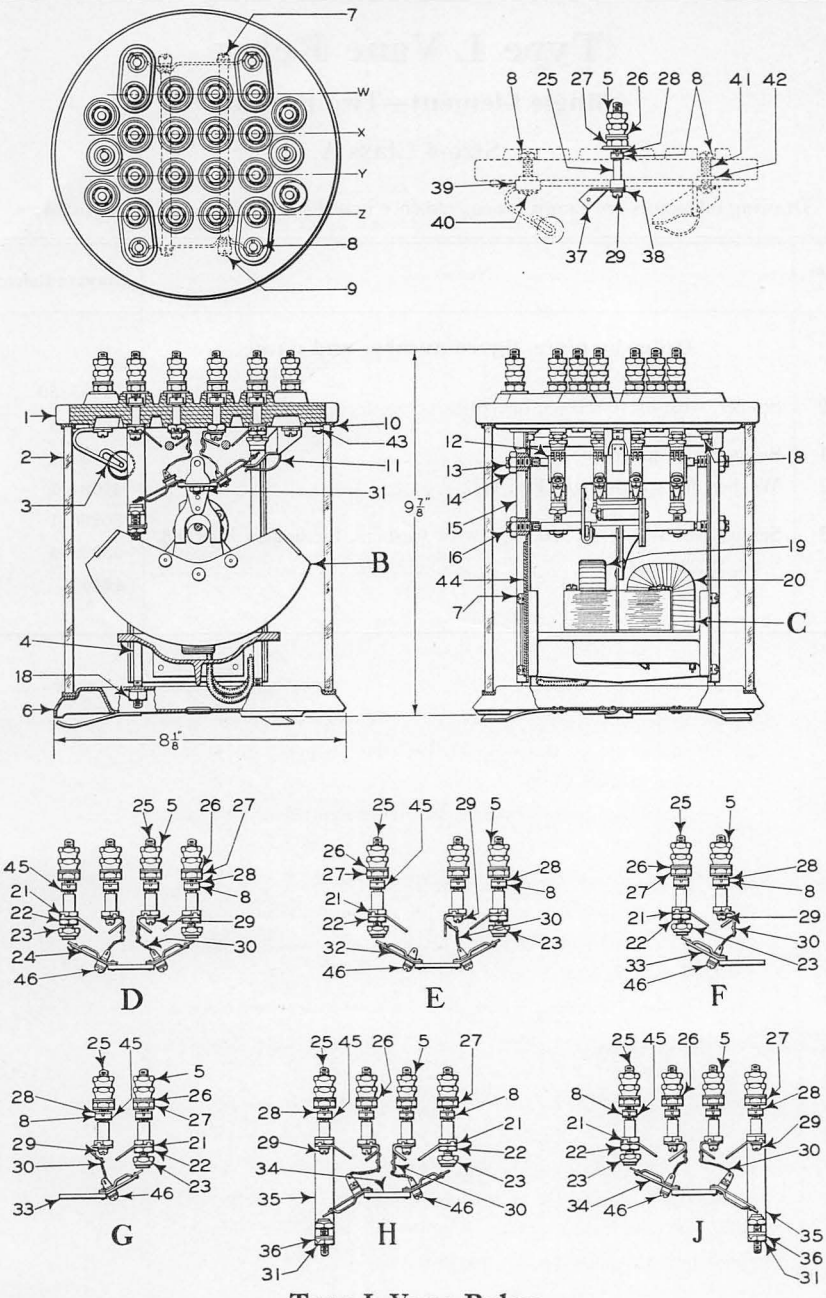
Single Element—Two Position

Size 4 Class A

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
50	Spacer, with drive screws, for cover	49655–50 52681–8
51	Support, for magnets	51539–2
52	Washer, for spanner nut Fig. 11	21684–1
53	Screw, No. 4-36 x $\frac{3}{16}$″ rd. hd., with washers, for fingers Figs. 28, 36, 37, 38 and 44	36206–1 53029–4 42403

PLATE E2803



Type L Vane Relay
Double Element—Two Position
For Repair Parts Only

June 1938 GENERAL RAILWAY SIGNAL COMPANY

Type L Vane Relay

Double Element—Two Position

Size 4 Class B

For Repair Parts Only

NOTE: For latest Vane Relays see Plates E2807 and E2809.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
B	Vane Complete, as shown, includes all parts for installing in relay. For relays with not more than two back contacts	51507–4 Gr. 4
B1	as above, except for relays with not more than four back contacts	51507–4 Gr. 5
B2	same as Fig. B, except for relays with not more than six back contacts	51507–4 Gr. 6
C	Magnet Complete, as shown, includes all parts for installing in relay. When ordering repair parts see tag on coils of magnet to be replaced and give data	51508–9 Gr. 1
D	Contact Group Complete, as shown, for use as independent front and back, has universal contacts. Includes all parts for adding or replacing contact group. For use in spaces W, X, Y or Z	51512–9 Gr. 7
E	Contact Group Complete, as shown, for use as dependent front and back, has universal contacts. Includes all parts for adding or replacing contact group. For use in spaces W, X, Y or Z	51512–19 Gr. 7
F	Contact Group Complete, as shown, for use as independent back, has universal contacts. Includes all parts for adding or replacing contact group. For use in spaces W, X, Y or Z	51512–12 Gr. 3
G	Contact Group Complete, as shown, for use as independent front, has universal contacts. Includes all parts for adding or replacing contact group. For use in spaces W, X, Y or Z	51512–13 Gr. 3
H	Contact Group Complete, as shown, for use as two independent front, has universal contacts. Includes all parts for adding or replacing contact group. For use in spaces W or Z	51512–10 Gr. 3
J	Contact Group Complete, as shown, for use as two independent back, has universal contacts. Includes all parts for adding or replacing contact group. For use in spaces W or Z	51512–11 Gr. 3

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY June 1938

Type L Vane Relay

Double Element—Two Position

Size 4 Class B

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
1	Cover, as shown, for relay	29511–33
2	Glass Case, for housing relay mechanism	13031–4
3	Stop Complete, as shown, for vane, includes roller	51530–5 Gr. 1
4	Stud, No. 14-24 x $8\frac{5}{8}$″, for fastening cover and glass case to base	980–12
5	Nut, No. 14-24 x $\frac{5}{16}$″ hex., for terminal post, Fig. 25	42843–1
6	Base Complete, as shown, for relay	51534 Gr. 1
7	Screw, No. 10-32 x ½″ fil. hd., includes lock washer, for fastening magnet to support, Fig. 15	12563–1 53029–3
8	Nut, No. 14-24 rd., for stud, Fig. 4 and terminal post, Fig. 25	42840–3
9	Screw, $\frac{5}{16}$″-24 x $4\frac{13}{16}$″ fil. hd., for fastening support, Fig. 15 in place	49522–6
10	Gasket, for glass case	13014–55
11	Stop Complete, as shown, for vane, includes spring, plate and support	51530–6 Gr. 1
12	Support Complete, as shown, for relay	51537 Gr. 1
13	Screw Bearing, for support, Fig. 12	43346–7
14	Nut, $\frac{5}{16}$″-32 hex., for screw bearings, Figs. 13 and 16	12578–2
15	Support Complete, as shown, for supporting relay mechanism. Includes hub for bearing	51539 Gr. 1
16	Bearing Complete, as shown, for vane	51527–1 Gr. 1
18	Nut, No. 14-24 x $\frac{3}{16}$″ hex., for screw, Fig. 4	42839–5
19	Local Coil, for relay. When ordering repair parts see tag on coil to be replaced and give data; otherwise specify voltage and frequency on which relay is to operate	51522–12
20	Line or Track Coil, for relay. When ordering repair parts see tag on coil to be replaced, and give data; otherwise specify voltage and frequency on which relay is to operate, and if used in track circuit, specify type of circuit	51522
21	Lock Washer, for nut, Fig. 22	1601–35

(Continued on following page)

June 1938 GENERAL RAILWAY SIGNAL COMPANY

Type L Vane Relay

Double Element—Two Position

Size 4 Class B

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
22	Nut, No. 10-32 hex., for locking contact, Fig. 23	577–2
23	Contact Complete, as shown, universal, for contact groups	42799–7 Gr. 8
23a	as above, except graphite	42799–7 Gr. 7
24	Finger Complete, as shown, has silver contacts riveted on insulation. For contact group, Fig. D	51528–15 Gr. 1
24a	as above, except has graphite contacts	51528–16 Gr. 1
25	Stud, No. 14-24 x $2\frac{1}{16}$″ hex., used as terminal post for contact groups.	380–4
26	Washer, for terminal post	1225–2
27	Nut, No. 14-24 x $\frac{3}{16}$″ hex., for terminal post	42839–5
28	Washer, lead, for terminal post	1533–33
29	Screw, No. 10-32 x $\frac{3}{16}$″ fil. hd., with lock washer, for fastening connector, Fig. 30 to terminal post	12563–22 53029–3
30	Connector Complete, as shown, for contact groups	42760–24 Gr. 1
31	Nut, No. 10-32 x $\frac{3}{8}$″ hex., includes lock washer, for fastening contact groups to support, Fig. 12. Also for fastening contact, Fig. 23 to support, Fig. 35	40796 53029–3
32	Finger Complete, as shown, has silver contacts riveted on insulation. For contact group, Fig. E	51528–19 Gr. 1
32a	as above, except has graphite contacts	51528–19 Gr. 2
33	Finger Complete, as shown, has silver contacts riveted on insulation. For contact groups, Figs. F and G	51528–18 Gr. 1
33a	as above, except has graphite contacts	51528–18 Gr. 2
34	Finger Complete, as shown, has silver contacts riveted on insulation. For contact groups, Figs. H and J	51528–17 Gr. 1
34a	as above, except has graphite contacts	51528–17 Gr. 2
35	Support, as shown, for supporting contact, for Figs. H and J	35921–21
36	Lock Washer, for nut, Fig. 31	53029–3
37	Ground Strip, as shown, for connecting frame to ground post	17378–9

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY June 1938

Type L Vane Relay

Double Element—Two Position

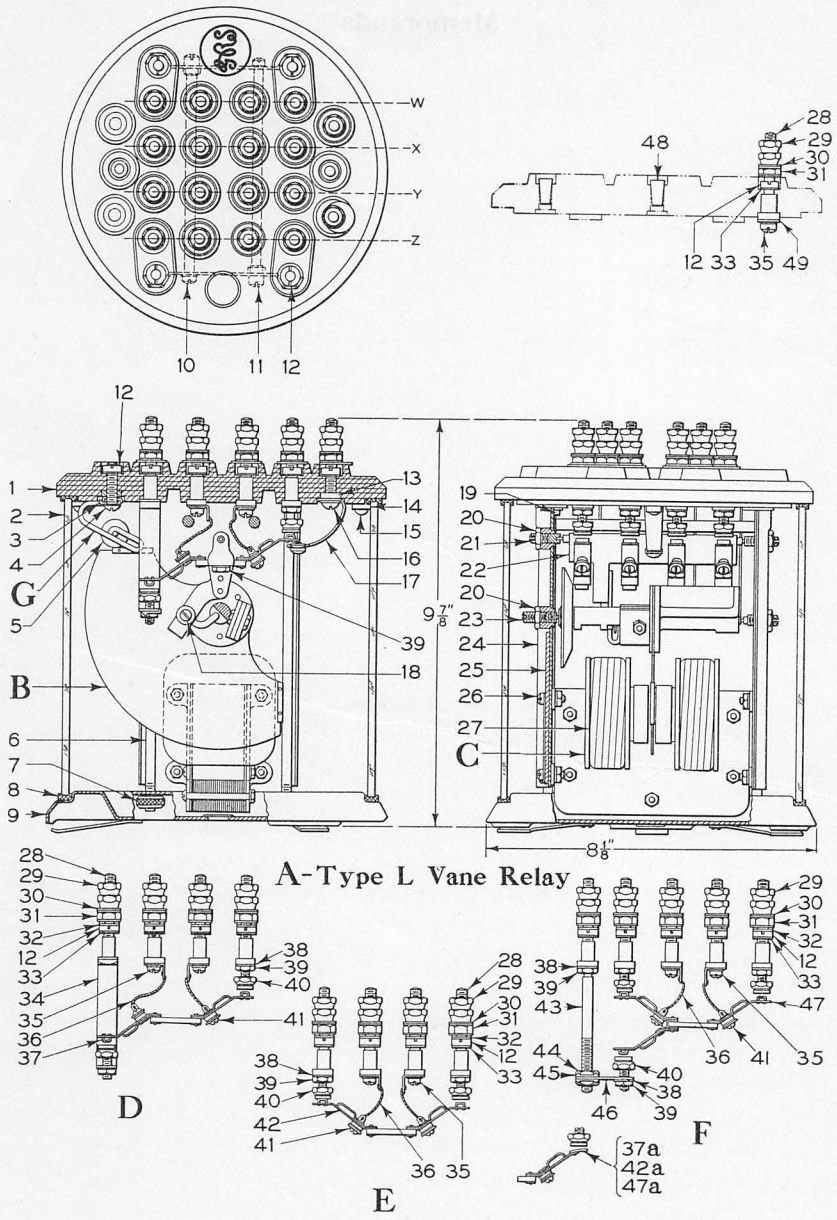
Size 4 Class B

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
38	Washer, $\frac{13}{64}$" I. D. x $\frac{13}{32}$" O. D. for terminal post	5046–5
39	Filler and Washer for stop, Fig. 3	53771 1601–25
40	Screw, No. 14-24 x 1" rd. hd., with lock washer for fastening stop, Fig. 3 to cover	50651–1 53029–8
41	Screw, No. 14-24 x $\frac{3}{4}$" rd. hd., with washers, for fastening stop, Fig. 11 to cover	0523–1 53029–8 31036–1
42	Washer, for screw, Fig. 41	1601–52
43	Spacer, with drive screws, for cover	49655–50 52681–8
44	Support, for magnets	51539–2
45	Washer, for spanner nuts Fig. 8	21684–1
46	Screw, No. 10-32 x $\frac{3}{16}$" rd. hd., with washers, for fingers	36206–1 53029–24 42403

Memoranda

PLATE E2807



A-Type L Vane Relay

Type L Vane Relay
Single Element—Two Position

June 1938 GENERAL RAILWAY SIGNAL COMPANY

Type L Vane Relay

Single Element—Two Position

Size 4 Class C

NOTE: Relays listed below are arranged for maximum contact combination of two dependent front and back, four independent front and two independent back contacts or equivalent.

Relays will be furnished with stirrup type, universal contacts as shown by Figs. D, E and F unless otherwise specified. These contacts are suitable for breaking high or low voltages (1st and 2nd range).

Relays may be equipped with quick-detachable, plug coupler arrangement as shown on Plate E2831, when specified.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Type L Vane Relay Complete, single element, two position, for line or track circuits. Specify voltage and frequency upon which relay is to operate, and when used in track circuits, specify type of circuit. See contact groups Figs. D, E and F and specify groups required and their position in relay by letters W, X, Y or Z.....	51535–4 Gr. 1
A1	as above, except with quick-detachable plug coupler as shown on Plate E2831.....	51535–4 Gr. 1 56480 Gr. 1
B	Vane Complete, as shown, includes all parts for installing in relay....	51507–9 Gr. 1
C	Magnet Complete, as shown, includes all parts for installing in relay. When ordering repair parts, see tag on coils of magnet to be replaced and give data shown thereon.....	51508–4 Gr. 2
D	Contact Group Complete, as shown, for use as two independent front or normal contacts; has stirrup type universal contacts. Includes all parts for adding or replacing contact group. For use in spaces W and Z.....	51512–25 Gr. 1
D1	as above, except equipped with heavy duty universal contacts Fig. 37a.....	51512–25 Gr. 2
E	Contact Group Complete, as shown, for use as independent front and back or normal and reverse contact; has stirrup type universal contacts. Includes all parts for adding or replacing contact group. For use in spaces X and Y.....	51512–24 Gr. 1

(*Continued on following page*)

GENERAL RAILWAY SIGNAL COMPANY June 1938

Type L Vane Relay

Single Element—Two Position

Size 4 Class C

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
E1	as above, except equipped with heavy duty universal contacts Fig. 42a	51512–24 Gr. 2
F	Contact Group Complete, as shown, for use as one dependent front and back and one independent front contact; has stirrup type universal contacts. Includes all parts for adding or replacing contact group. For use in spaces W and Z	51512–26 Gr. 1
F1	as above, except equipped with heavy duty universal contacts Fig. 47a	51512–26 Gr. 2
G	Stop Complete, back, for vane	51530–5 Gr. 1
1	Cover, as shown, for relay	29511–33
2	Glass Case, for housing relay mechanism	13031–4
3	Filler and Washer, for stop Fig. G	53771 1601–25
4	Screw, No. 14-24 x 1″, rd. hd., with lock washer, for fastening stop Fig. G to cover	50596–1 53029–22
5	Roller only, for stop Fig. G	31942–15
6	Stud, No. 14-24 x 8⅝″ lg., for fastening cover and glass case to base.	980–44
7	Knurled Nut, No. 14-24, with spring, for stud Fig. 6	846–8 786–150
8	Gasket, for glass case	13014–55
9	Base Complete, as shown, for relay	51534 Gr. 2
10	Screw, No. 10-32 x ½″ fil. hd., with lock washer, for screw Fig. 11.	12563–1 53029–3
11	Screw, $\frac{5}{16}$″-24 fil. hd., for fastening supports Fig. 24 in place	49522–12
12	Spanner Nut, No. 14-24, for stud Fig. 6 and terminal posts Fig. 28.	42840–3
13	Washer, for screw Fig. 16	1601–52
14	Spacer, for cover	49655–50
15	Drive Screw, No. 6 x ⅜″ lg. for spacer Fig. 14	52681–8

(*Continued on following page*)

June 1938 GENERAL RAILWAY SIGNAL COMPANY

Type L Vane Relay

Single Element—Two Position

Size 4 Class C

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
16	Screw, No. 14-24 x $\frac{3}{4}$" rd. hd., for fastening stop Fig. 17 to cover	50595–3
17	Stop Complete, front, for vane	51530–7 Gr. 1
18	Bearing Screw, as shown, for link	53829–4
19	Nut, No. 14-24 x $\frac{1}{2}$" hex., for locking screw Fig. 6 to cover	42839–5
20	Nut, $\frac{5}{16}$"-32 hex., for bearing screws Figs. 21 and 23	12578–2
21	Bearing Screw, for support Fig. 22	43346–7
22	Contact Support Complete, as shown, for relay	51537–10 Gr. 1
23	Bearing Complete, jewel, for vane	51527–1 Gr. 1
24	Support Complete, as shown, for supporting relay mechanism	51539 Gr. 2
25	Support, for magnet	51539–6
26	Screw, No. 10-32 x $\frac{1}{2}$" fil. hd., with hex. nut and lock washer, for fastening magnet to support	12563–1 53029–3 40796
27	Coil, for relay. When ordering repair parts see tag on coil to be replaced and give data, otherwise specify voltage and frequency upon which relay is to operate, and if used in track circuit, specify type of circuit	51522–9
28	Stud, No. 14-24, used as terminal post for contact groups	380–4
29	Nut, No. 14-24 x $\frac{5}{16}$" hex., for terminal posts	42843–1
30	Washer, for terminal posts	1225–2
31	Nut, No. 14-24 x $\frac{3}{16}$", hex., for terminal posts	42839–5
32	Lead Washer, for terminal posts	1533–33
33	Washer, for nut Fig. 12	21684–1
34	Support, as shown, for contact group Fig. D	35921–21
35	Screw, No. 10-32 x $\frac{3}{8}$", fil. hd., with lock washer, for fastening connector Fig. 36 to terminal post	12563–22 53029–3
36	Connector Complete, as shown, for contact fingers	42760–1 Gr. 18
37	Finger Complete, as shown, has stirrup type silver contacts riveted on insulation block. For contact group Fig. D	51528–25 Gr. 1

(*Continued on following page*)

GENERAL RAILWAY SIGNAL COMPANY June 1938

Type L Vane Relay

Single Element—Two Position

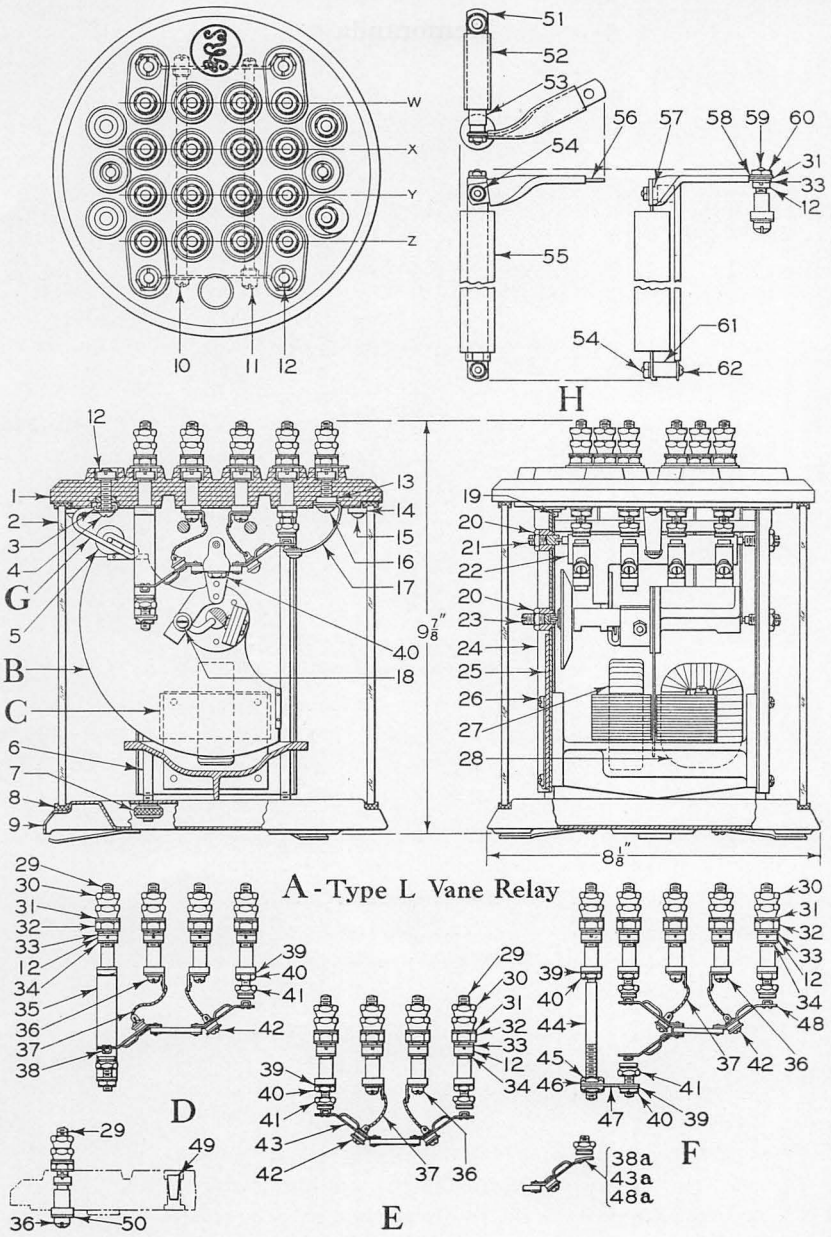
Size 4 Class C

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
37a	as above, except heavy duty finger, for contact group Fig. D1	51528–25 Gr. 2
38	Lock Washer, for nut Fig. 39	53029–3
39	Nut, No. 10-32, hex., with lock washer, for locking contact Fig. 40 to terminal post, also for fastening contact springs to contact support Fig. 22	40796 50616–1
40	Contact Complete, as shown, universal, for contact groups	42799–7 Gr. 8
41	Screw, No. 4-36 x $\frac{3}{16}$″, rd. hd., with washers, for fastening connector to contact finger	36206–1 42403 53029–24
42	Finger Complete, as shown, has stirrup type silver contacts riveted on insulation block. For contact group Fig. E	51528–24 Gr. 1
42a	as above, except heavy duty finger, for contact group Fig. E1	51528–24 Gr. 2
43	Stud, as shown, for supporting contact	980–24
44	Nut, No. 14-24 hex., for stud Fig. 43	46989–2
45	Lock Washer, for nut Fig. 44	1601–62
46	Support, as shown, for contact	35921–52
47	Finger Complete, as shown, has stirrup type silver contacts riveted on insulation block. For contact group Fig. F	51528–23 Gr. 1
47a	as above, except heavy duty finger, for contact group Fig. F1	51528–23 Gr. 2
48	Cork, used as plug for blank terminal post holes	49740–1
49	Washer, used as shown on coil terminals	5046–5

Memoranda

PLATE E2809



Type L Vane Relay
Double Element—Two Position

June 1938 GENERAL RAILWAY SIGNAL COMPANY

Type L Vane Relay

Double Element—Two Position

Size 4 Class D

NOTE: Relays listed below are arranged for maximum contact combination of two dependent front and back, four independent front and two independent back contacts or equivalent.

Relays will be furnished with stirrup type, universal contacts as shown by Figs. D, E and F unless otherwise specified. The contacts are suitable for breaking high or low voltages (1st and 2nd range).

Relays may be equipped with quick-detachable plug coupler arrangement as shown on Plate E2831, when specified.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Type L Vane Relay Complete, double element, two position for line or track circuits. Specify voltage and frequency upon which relay is to operate, and when used in track circuits, specify type of circuit. See contact groups Figs. D, E and F and specify groups required and their position in relay by letters W, X, Y and Z.....	51535–5 Gr. 1
A1	as above, except with quick-detachable plug coupler as shown on Plate E2831.....	51535–5 Gr. 1 56480 Gr. 1
B	Vane Complete, as shown, includes all parts for installing in relay..	51507–9 Gr. 1
C	Magnet Complete, as shown, includes all parts for installing in relay. When ordering repair parts, see tag on coils of magnet to be replaced and give data shown thereon.....	51508–9 Gr. 3
D	Contact Group Complete, as shown, for use as two independent front or normal contacts; has stirrup type universal contacts. Includes all parts for adding or replacing contact group. For use in spaces W and Z.....	51512–25 Gr. 1
D1	as above, except equipped with heavy duty universal contacts Fig. 38a.....	51512–25 Gr. 2
E	Contact Group Complete, as shown, for use as independent front and back or normal and reverse contacts; has stirrup type universal contacts. Includes all parts for adding or replacing contact group. For use in spaces X and Y.....	51512–24 Gr. 1

(*Continued on following page*)

GENERAL RAILWAY SIGNAL COMPANY June 1938

Type L Vane Relay

Double Element—Two Position

Size 4 Class D

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
E1	as above, except equipped with heavy duty universal contacts Fig. 43a	51512–24 Gr. 2
F	Contact Group Complete, as shown, for use as one dependent front and back and one independent front contact; has stirrup type universal contacts. Includes all parts for adding or replacing contact group. For use in spaces W and Z	51512–26 Gr. 1
F1	as above, except equipped with heavy duty universal contacts Fig. 48a	51512–26 Gr. 2
G	Stop Complete, for vane	51530–5 Gr. 1
H	Resistance Unit Complete, 600 ohms, for use on all line relays. Includes all parts as shown	43286–2 Gr. 1
1	Cover, as shown, for relay	29511–33
2	Glass Case, for housing relay mechanism	13031–4
3	Filler and Washer, for stop Fig. G	53771 1601–25
4	Screw, No. 14-24 x 1″ rd. hd., with lock washers, for fastening stop Fig. G to cover	50596–1 53029–22
5	Roller, only, for stop Fig. G	31942–15
6	Stud, No. 14-24 x $8\frac{5}{8}$″ lg., for fastening cover and glass case to base	980–44
7	Knurled Nut, No. 14-24, with spring, for stud Fig. 6	846–8 786–150
8	Gasket, for glass case	13014–55
9	Base Complete, as shown, for relay	51534 Gr. 2
10	Screw, No. 10-32 x $\frac{1}{2}$′ fil. hd., with lock washer, for screw Fig. 11	12563–1 53029–3
11	Screw, $\frac{5}{16}$″-24 fil. hd., for fastening supports Fig. 24 in place	49522–12
12	Spanner Nut, No. 14-24, for stud Fig. 6 and terminal posts Figs. 29 and 59	42840–3

(*Continued on following page*)

June 1938 GENERAL RAILWAY SIGNAL COMPANY

Type L Vane Relay

Double Element—Two Position

Size 4 Class D

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
13	Washer, for screw Fig. 16	1601–52
14	Spacer, for cover	49655–50
15	Drive Screw, No. 6 x $\frac{3}{8}$″ lg., for spacer Fig. 14	52681–8
16	Screw, No. 14-24 x $\frac{3}{4}$″ rd. hd., for fastening stop Fig. 17 to cover	50595–3
17	Stop Complete, as shown, for vane	51530–7 Gr. 1
18	Bearing Screw, as shown, for link	53829–4
19	Nut, No. 14-24 x $\frac{1}{2}$″ hex., for locking screw Fig. 6 to cover	42839–5
20	Nut, $\frac{5}{16}$″-32 hex., for bearing screws Figs. 21 and 23	12578–2
21	Bearing Screw, for support Fig. 22	43346–7
22	Contact Support Complete, as shown, for relay	51537–10 Gr. 1
23	Bearing Complete, jewel, for vane	51527–1 Gr. 1
24	Support Complete, as shown, for supporting relay mechanism	51539 Gr. 2
25	Support, for magnet	51539–6
26	Screw, No. 10-32 x $\frac{1}{2}$″ fil. hd., with lock washer, for fastening magnet to support	12563–1 53029–3
27	Local Coil, for relay. When ordering repair parts see tag on coil to be replaced and give data, otherwise specify voltage and frequency upon which relay is to operate	51522–20
28	Line or Track Coil, for relay. When ordering repair parts see tag on coil to be replaced and give data, otherwise specify voltage and frequency upon which relay is to operate, and if used in track circuit specify type of circuit	51522–21
29	Stud, No. 14-24, used as terminal post for contact groups	380–4
30	Nut, No. 14-24 x $\frac{5}{16}$″ hex., for terminal posts	42843–1
31	Washer, for terminal posts	1225–2
32	Nut, No. 14-24 x $\frac{3}{16}$″ hex., for terminal posts	42839–5
33	Lead Washer, for terminal posts	1533–33
34	Washer, for nut Fig. 12	21684–1

(*Continued on following page*)

GENERAL RAILWAY SIGNAL COMPANY June 1938

Type L Vane Relay

Double Element—Two Position

Size 4 Class D

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
35	Support, as shown, for contact group	35921–21
36	Screw, No. 10-32 x 3/8″ fil. hd., with lock washer, for fastening connector Fig. 37 to terminal post	12563–22 53029–3
37	Connector Complete, as shown, for contact fingers	42760–1 Gr. 18
38	Finger Complete, as shown, has stirrup type silver contacts riveted on insulation block. For contact group Fig. D	51528–25 Gr. 1
38a	as above, except heavy duty finger. For contact group Fig. D1	51528–25 Gr. 2
39	Lock Washer, for nut Fig. 40	53029–3
40	Nut, No. 10-32, hex., with lock washer, for locking contact Fig. 41 to terminal post, also for fastening contact spring to contact support Fig. 22	40796 50616–1
41	Contact Complete, as shown, universal, for contact groups	42799–7 Gr. 8
42	Screw, No. 4-36 x 3/16″ rd. hd., with washers, for fastening connector to contact fingers	36206–1 42403 53029–24
43	Finger Complete, as shown, has stirrup type silver contacts riveted on insulation block. For contact group Fig. E	51528–24 Gr. 1
43a	as above, except heavy duty finger. For contact group Fig. E1	51528–24 Gr. 2
44	Stud, as shown, for supporting contact	980–24
45	Nut, No. 14-24 hex., for stud Fig. 44	46989–2
46	Lock Washer, for nut Fig. 45	1601–62
47	Support, as shown, for contact	35921–52
48	Finger Complete, as shown, has stirrup type silver contacts riveted on insulation block. For contact group Fig. F	51528–23 Gr. 1
48a	as above, except heavy duty finger. For contact group Fig. F1	51528–23 Gr. 2
49	Cork, used as plug, for terminal post holes	49740–1
50	Washer, used as shown	5046–5
51	Support, only, for resistance unit	35921–92

(Continued on following page)

June 1938 GENERAL RAILWAY SIGNAL COMPANY

Type L Vane Relay

Double Element—Two Position

Size 4 Class D

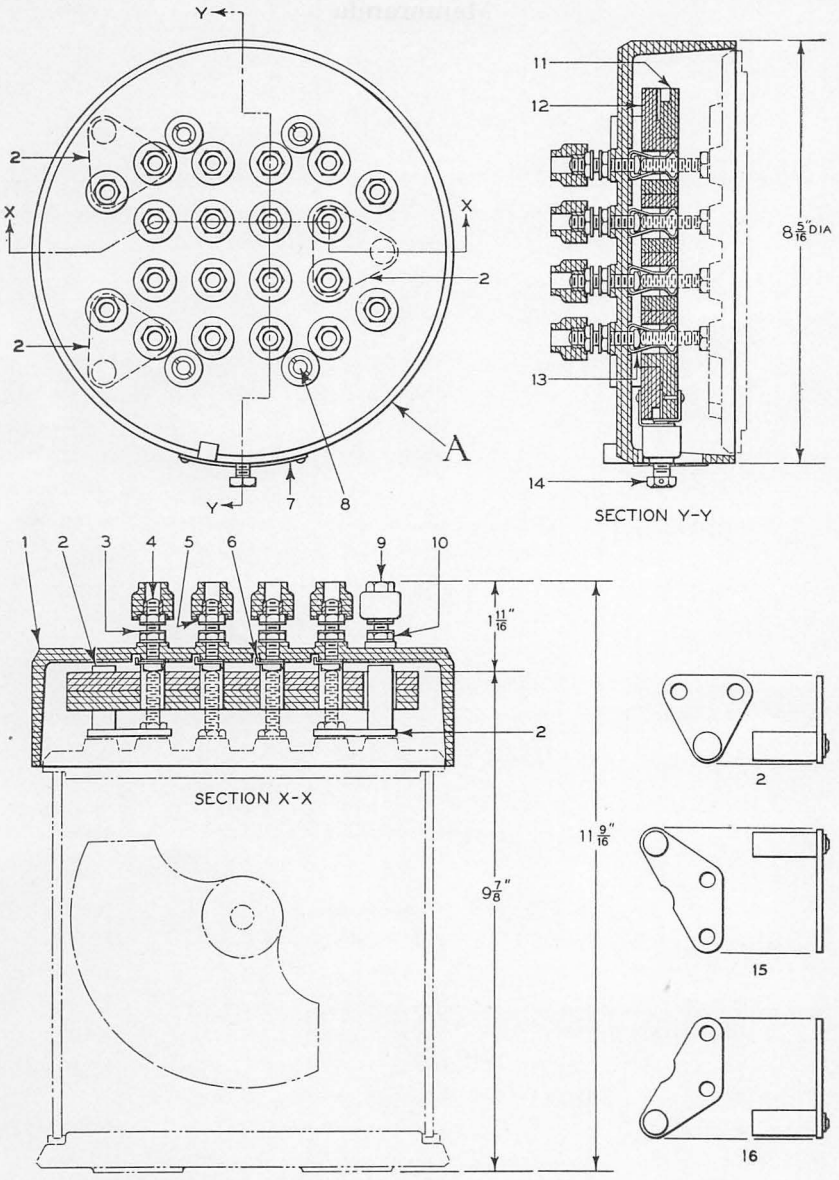
Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
52	Tubing, insulation, for supports, Figs. 51 and 56	
53	Insulator Complete, for use between resistor Fig. 55 and support Fig. 51	42792–3
54	Nut, No. 10-32 x 1/8″ hex., with lock washer, for insulator Fig. 53 and screw Fig. 62	40796 53029–3
55	Resistor, only, 600 ohms	55483
56	Support, only, for resistor	35921–93
57	Washer, for use between insulator Fig. 53 and support Fig. 56	1225–81
58	Lock Washer, for nut Fig. 60	53029–2
59	Stud, No. 14-24, used as terminal post for resistance unit	380–3
60	Nut, No. 14-24 x 3/16″ hex., for stud Fig. 59	42839–1
61	Spacer, for use between support Fig. 51 and resistor	49655–114
62	Screw, No. 10-32 x 1″ rd. hd., for fastening resistor to support	2438–20

Memoranda

Memoranda

PLATE E2831



Quick Detachable Plug Coupler
For Type L Vane Relays

June 1938 GENERAL RAILWAY SIGNAL COMPANY

Quick-Detachable Plug Coupler

For

Type L Vane Relays

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Quick-Detachable Plug Coupler Complete, as shown, includes all parts and instructions for installing on Type L Vane Relays having full complement of terminal posts	56480 Gr. 1
A1	as above, except for Type L Vane Relays which have two holes in cover without terminal posts	56480 Gr. 2
1	Cover, only, for plug coupler	29511–64
2	Plate Complete, for registering plug coupler. Three required for plug coupler Fig. A and one required for plug coupler Fig. A1	56484 Gr. 1
3	Washer, for screws Fig. 4	1225–2
4	Screw, No. 14-24 x 1¼″ sq. hd., terminal post for plug coupler	350–1
5	Nut, No. 14-24 x $\frac{3}{16}$″ hex., for terminal posts	42839–5
6	Lock Washer, for screw Fig. 4	1601–101
7	Name Plate, with drive screws, for plug coupler	401–217 54392–1
8	Screw, No. 14-24, with washer and spanner nut, for fastening slides Figs. 11 and 12 to cover	12651–15 590–61 42840–5
9	Nut, insulating, No. 14-24, for terminal posts	56482
10	Nut, No. 14-24 x ⅛″ hex., for terminal posts	46989–2
11	Slide Complete, as shown, for plug coupler	56485–1 Gr. 1
12	Slide Complete, as shown, for plug coupler	56485 Gr. 1
13	Spring Contact, for relay posts	56459
14	Screw, $\frac{5}{16}$″-18 x 1″ hex. hd., for slide Fig. 11	3440–24
15	Plate Complete, back, for registering plug coupler Fig. A1 only, one required	56484–1 Gr. 2
16	Plate Complete, front, for registering plug coupler, Fig. A1 only, one required	56484–1 Gr. 1

Memoranda

Section E, Part 26

Type R Remote Control Relays

Supersedes Section E, Part 26, dated March 1930

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Type R Remote Control Relay

Foreword

The Type R Relay was especially designed for controlling the operating current to low voltage switch machines. It is shown in the following circuits as switch control relay WR, and operates in a manner similar to an electric pole-changer.

The Type R Relay as shown on Plate E2601 has two pairs of coils and a common armature which carries the movable contacts. When the left coils are energized the contacts on the left close and when the right coils are energized the contacts on the right side close. The coil controlling contacts are arranged to make-before-break so that the contacts for one or the other pair of coils are always closed. When the armature is in the full normal or full reverse position current is cut off by the coil controlling contacts; therefore, the relay takes energy only when operating.

All connections to the relay are brought in to outside binding posts. The relay is equipped with a base for shelf mounting and with lugs for wall mounting. The top and front are glass enclosed so that the mechanism can be readily adjusted.

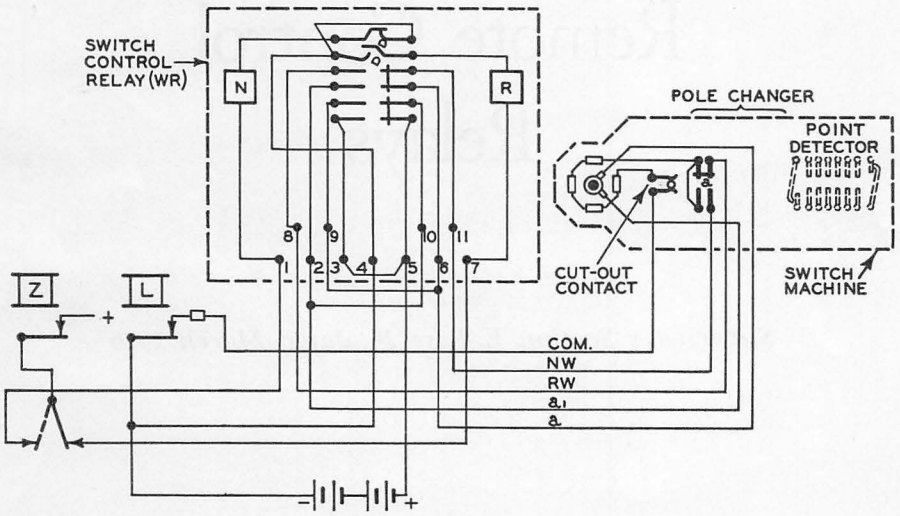

Fig. 1

Fig. 1 shows the Type R Relay as used in a typical circuit with a low-speed, low-voltage switch machine having no electric pole-changer. This arrangement is recommended where source of power supply is primary battery. Five wires are necessary from point of control to the machine; however, wire of larger size may be used to compensate for the somewhat greater voltage drop than occurs in the three wire control arrangement as shown in Fig. 2.

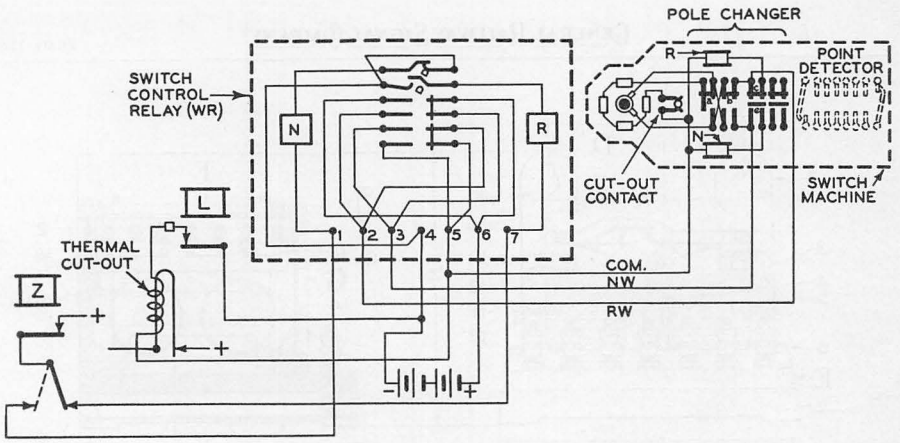

Fig. 2

Fig. 2 shows the Type R Relay as used in a typical circuit with switch machine having an electric pole-changer. This arrangement requires three wires from the point of control to the machine, and is the recommended practice where source of power supply other than primary battery is available.

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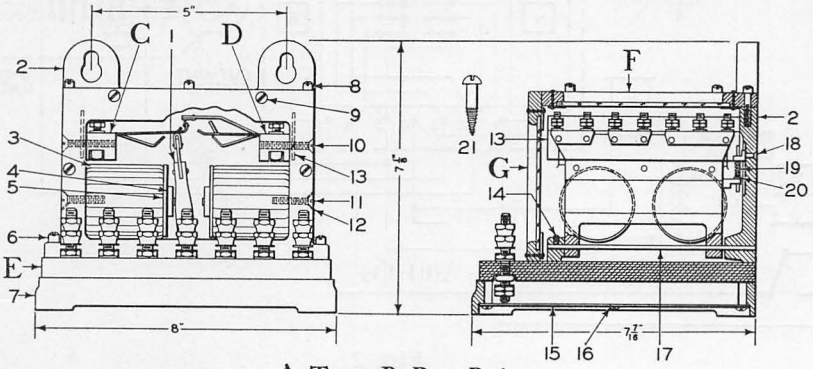
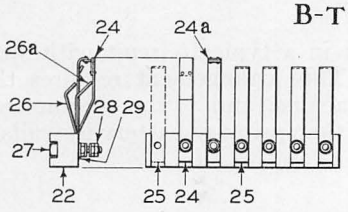
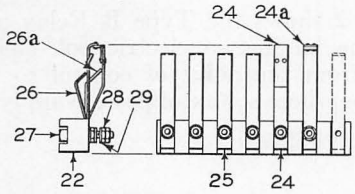


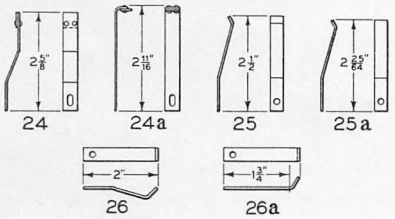
A-Type R D-c. Relay
B-Type R A-c. Relay

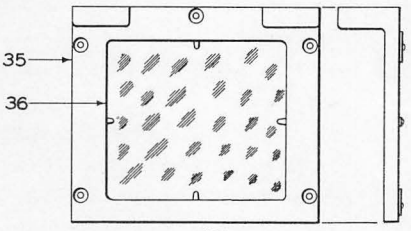


C-Contact Block–Left Hand

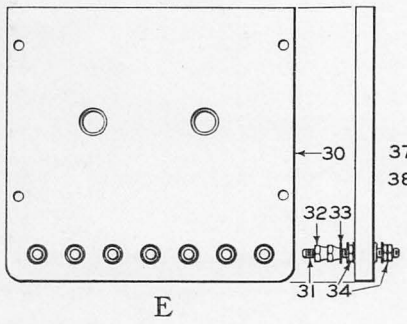


D-Contact Block–Right Hand

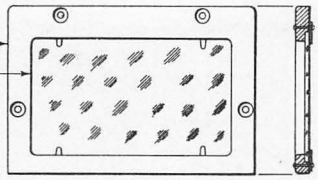




F



E



G

Type R Remote Control Relay

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Type R Remote Control Relay

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Type R Relay Complete, as shown, arranged for wall or shelf mounting. For 20 volt d-c. operation	53180 Gr. 6
A1	as above, except has four additional terminal posts, for use with switch machine having no pole-changer where 5 wire control is used	53180 Gr. 7
B	Type R Relay Complete, arranged for wall or shelf mounting. For 110 volt, 60 cycle or 55 volt, 25 cycle a-c. operation	53180 Gr. 8
C	Contact Block Complete, left hand, as shown, for use with 20 volt d-c. operation	52256–4 Gr. 1
C1	as above, except for use with 110 volt, 60 cycle and 55 volt, 25 cycle a-c. operation	52256–4 Gr. 3
C2	same as Fig. C, except has extra contact as shown by dotted lines for use with switch machine not having pole-changer	52256–4 Gr. 2
D	Contact Block Complete, right hand, as shown, for use with 20 volt d-c. operation	52256–5 Gr. 1
D1	as above, except for use with 110 volt, 60 cycle and 55 volt, 25 cycle a-c. operation	52256–5 Gr. 3
D2	same as Fig. D, except has extra contact as shown by dotted lines, for use with switch machine not having pole-changer	52256–5 Gr. 2
E	Terminal Board Complete, as shown, for relays, Figs. A and B	52292–19 Gr. 1
E1	as above, except has four additional terminal posts for relay, Fig. A1	52292–23 Gr. 1
F	Top Cover Complete, as shown, for relay	53183–1 Gr. 1
G	Front Cover Complete, as shown, for relay	53183 Gr. 1
1	Armature Complete, as shown. Includes contacts riveted in place	2634–2 Gr. 1
2	Frame, as shown, for relay, includes stud for spring, Fig. 19	53181 441–143
3	Coil, as shown, four required. For use with 20 volt d-c. relay	2078–13 Gr. 1
3a	as above, except for use with 110 volt, 60 cycle or 55 volt, 25 cycle a-c. relay	2078–13 Gr. 2
4	Core, for coil, for use on d-c. relay	2528–2 Gr. 1
4a	as above, except for use on a-c. relay	2528–2 Gr. 2

(Continued on following page)

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Type R Remote Control Relay

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
5	Washer, for coil	39695
6	Screw, No. 14-24 x 1¼″ fil. hd., for fastening frame, Fig. 2, to base	0651
7	Base, for relay, Figs. A and B	53182
7a	as above, except for use with relay, Fig. A1	53182–1
8	Screw, No. 8-32 x ¾″ fil. hd., for fastening front cover to frame	55160–14
9	Screw, No. 8-32 x ⅝″ fl. hd., for fastening front cover to frame	18746–2
10	Screw, No. 10-32 x 1¼″ fl. hd., for fastening contact blocks, Figs. C and D to frame	34053
11	Screw, No. 14-24 x 1″ fl. hd., for fastening core to frame	0380
12	Lock Washer, for screw, Fig. 11	53029
13	Insulator, for use back of contact block	2539–12
14	Screw, No. 10-32 x $\frac{3}{16}$″ headless, for locking pin, Fig. 17, in relay frame	9549–1
15	Plate, for bottom of relay, Figs. A and B	53185
15a	as above, except for use with relay, Fig. A1	53185–1
16	Screw, No. 6-32 x ⅜″ rd. hd., for fastening plate, Fig. 15, to base	2426–8
17	Pin, hinge for armature	504–94
18	Stud, for spring, Fig. 19	441–143
19	Spring, as shown for centering armature	786–74
20	Guide, for spring	52724–2
21	Wood Screw, No. 14 x 1¼″, for mounting relay	0833
22	Contact Block only, for use with Figs. C and D	47508–30
24	Contact Complete, as shown, for contact blocks Figs. C, C1, C2, D, D1 and D2. One required for each contact block	13061–35 Gr. 1
24a	Contact Complete, as shown, for contact blocks Figs. C, C1, C2, D, D1 and D2. One required for each contact block	13061–36 Gr. 1
25	Contact Spring, 2½″ lg., four required for each block Figs. C and D. Five required for each block Figs. C2 and D2	2566–23
25a	Contact Spring, $2\frac{25}{64}$″ lg., four required for each block Figs. C1 and D1	2566–29
26	Stop, for contacts Figs. 24a, 25, and 25a	35470–17

(*Continued on following page*)

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Type R Remote Control Relay

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
26a	Stop, for contacts Fig. 24	35470–33
27	Screw, No. 8-32 x 1⅛″ sq. hd., for fastening contact springs to block	23034–1
28	Nut, No. 8-32 hex., for screw, Fig. 27	3891–1
29	Washer, for screw, Fig. 27	2534–1
30	Terminal Board, only, for Fig. E	39964–107
30a	as above, except for Fig. E1	39964–152
31	Terminal Post Complete, as shown, for relay	49455 Gr. 21
32	Nut, No. 14-24 x $\frac{5}{16}$″ hex., for terminal post	42843–1
33	Washer, for terminal post	1225–2
34	Nut, No. 14-24 x ⅛″ hex., for terminal post	46989–2
35	Cover only, for top cover, Fig. F, includes clips for fastening glass.	53184–1 18547 17908
36	Glass, for top cover	50538–31
37	Cover, only, for front cover, Fig. G, includes clips for fastening glass.	53184 18547 0677
38	Glass, for front cover	50538–30

Memoranda

Section E, Part 25

Thermal Relays and Thermal Cut-Out

Supersedes Pages 250, 251, Plates E2501 and E2503, dated April 1931, also Plate E2505 dated March 1930

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General Information

Type T Thermal Relays consist of two contacts, one stationary and the other mounted on a bi-metallic strip, resistance wire being wound around it to form a heating unit.

When electric current passes through the heater, the heat generated expands the two metals that make up the bi-metallic strip. The metals, by virtue of their composition, expand unequally, setting up forces that bend the strip. The contacts touch and complete the circuit.

The relays may be used on either a-c. or d-c. The timing is not changed as the heating effect is the same in either case.

All thermal relays should have neutral repeater relays as the time of relay may be changed if the metallic strip is heated for an excessive period. As soon as the thermal relay is heated and completes its movement to close the normally open contact, the repeater relay picks up by a parallel path through the contacts just made, and sticks up through its own front contact and the heater coil on the thermal. Since, however, the resistance of the relay coil is now in series with the heater, the current is very small compared to when the heater was directly across the battery. Therefore, there is very little power consumption in the heater and it cools off.

All relays are designed for wall mounting except the Class A which may be either wall or shelf mounted.

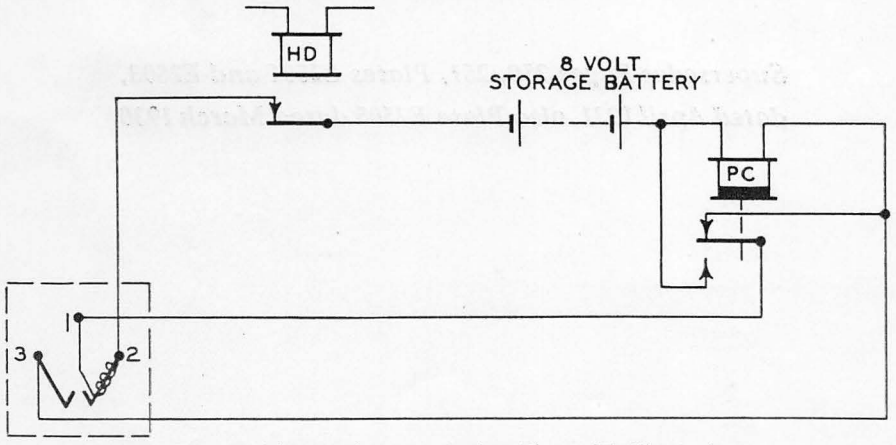


Fig. 1. Typical Circuit for Type T Class A

Fig. 1 is a typical circuit showing the control of the PC Relay through a Class A Thermal Relay. A time delay is inserted in this repeater circuit of the HD relay so that if the HD relay should become momentarily energized

only to release again, the PC relay will not follow and thus pole-change and flash the signal in the rear.

This relay may also be used in highway crossing circuits to provide the same length warning time for a fast train or a slow one, also to provide a time delay between flashing of lights and lowering of gates at a crossing.

For information on above applications, consult our nearest district office.

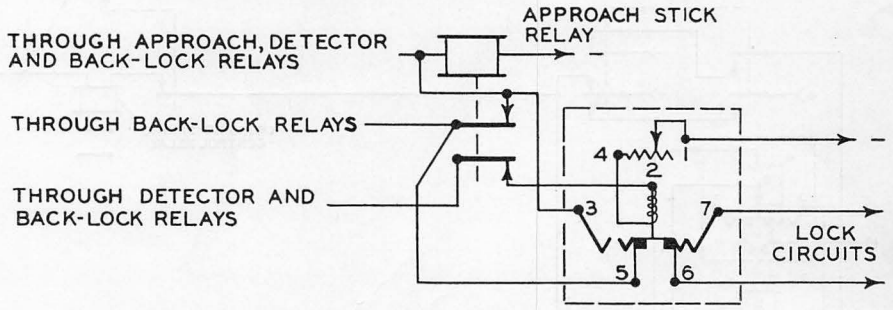


Fig. 2. Typical Circuit for Type T Class B

Fig. 2 is a typical circuit which provides approach, detector, route and release locking, suitable time intervals being provided by the thermal relay. Should the approach track be occupied and the operator wish to set up another route, the thermal relay provides a time delay in the pickup of the approach stick relay and a still greater time delay in the energization of the lock relay. Then, and only then, can energy be applied to the switch machine to change the route.

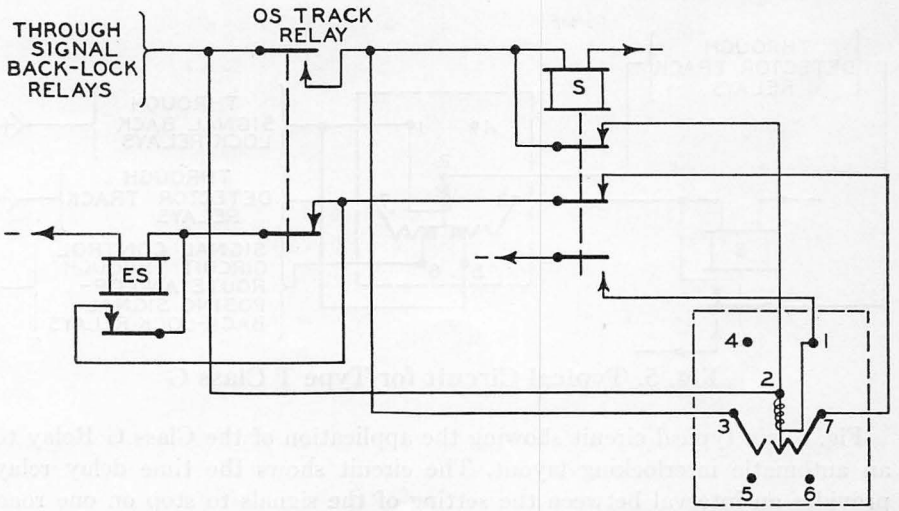


Fig. 3. Typical Circuit for Type T Class D and E

Fig. 3 is a typical circuit showing where two signals govern over a switch in the same direction and the lever man decides to take the clear signal away from an approaching train and set up the route to clear the other signal, a time delay being inserted for safety.

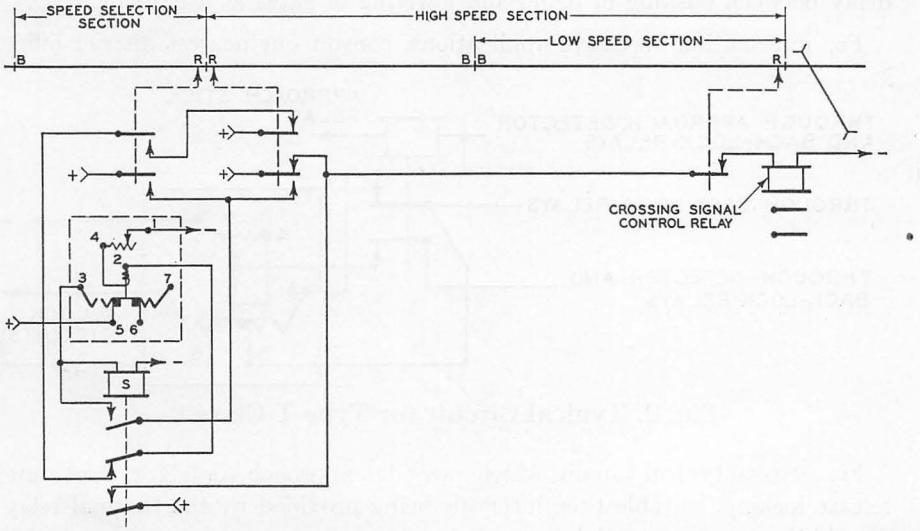


Fig. 4. Typical Circuit for Type T Class F and H

Fig. 4 is a typical circuit showing the application of the Class F and H Relays to highway crossing circuits requiring two timings, one for slow trains and one for fast trains.

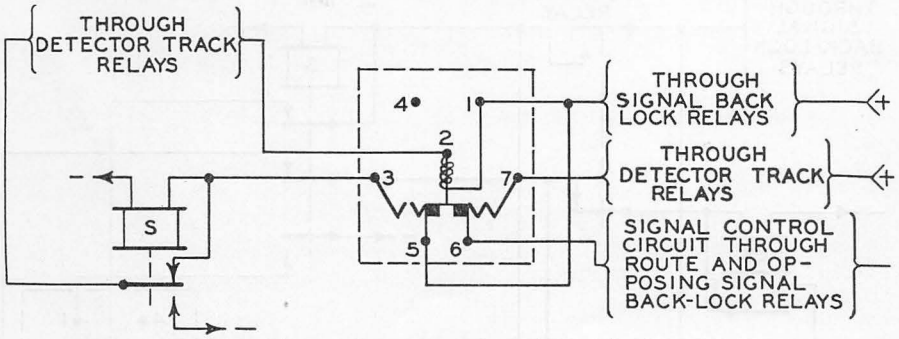


Fig. 5. Typical Circuit for Type T Class G

Fig. 5 is a typical circuit showing the application of the Class G Relay to an automatic interlocking layout. The circuit shows the time delay relay provides an interval between the setting of the signals to stop on one road and the clearing of signals on the other.

While we have shown only one typical circuit for each Class of Thermal Relay, these relays may be used in numerous circuits.

If the circuits or operating characteristics of the relays shown do not fulfill your requirements, kindly supply our nearest District Office the following information:

1—Dependent or independent contacts.

2—Normal closed contact or not.

3—Voltage regulating resistor or not.

4—Working voltage.

5—Kind of battery or source of supply.

6—The operating time desired; i. e., the time to close the normally open contact and the time for a complete operating cycle.

7—The average time between successive operations.

8—The application of the relay.

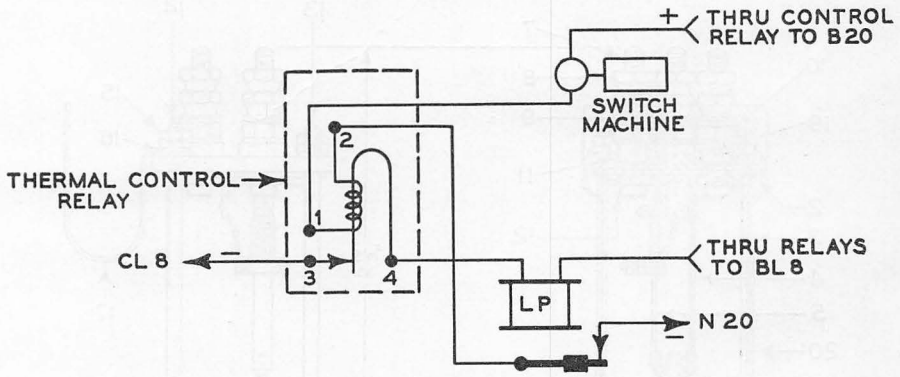
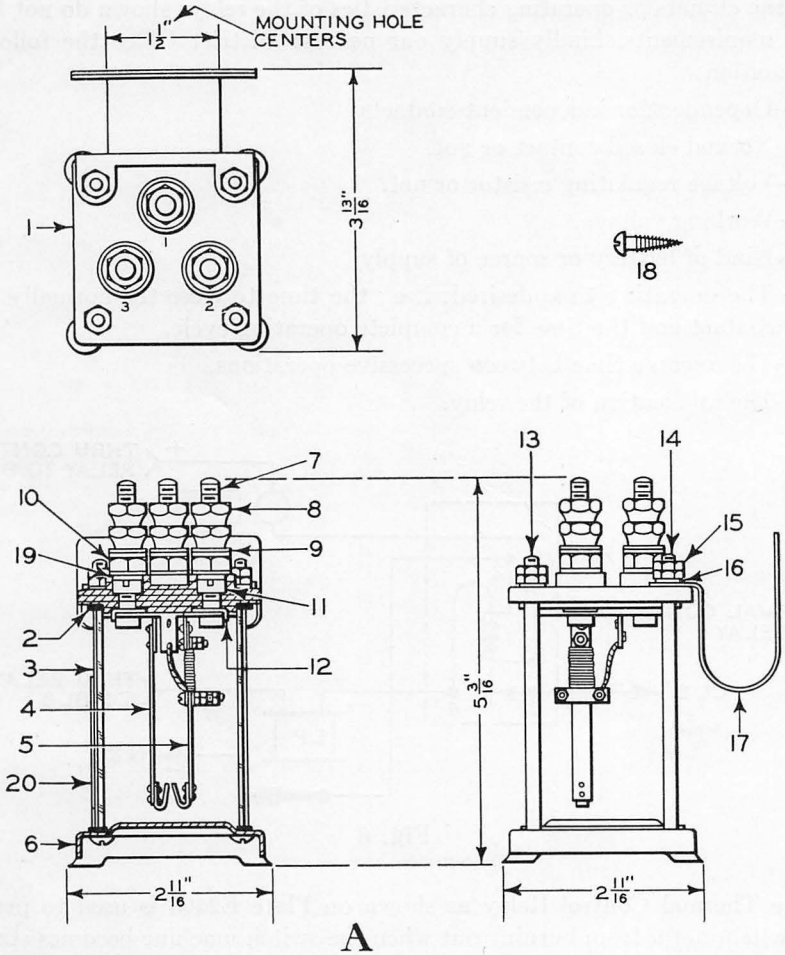


Fig. 6

The Thermal Control Relay as shown on Plate E2505 is used to protect the switch motor from burning out when the switch machine becomes stalled, as when the switch points meet an obstruction.

Fig. 6 shows typical connections of a thermal control relay used for this purpose. A neutral relay (a lock relay or a lock repeater relay) having contacts suitable for breaking the operating current to switch motor is controlled through the contacts of thermal cut-out. The heating unit of thermal cut-out is connected in series with the switch motor circuit and if the switch motor draws current for a period of approximately 90 seconds, the contacts open, depriving the LP relay of energy, thereby disconnecting energy from the motor circuit.

PLATE E2501



Type T Class A Thermal Relay

Type T Class A

Thermal Relay

Non-Adjustable

NOTE: The Type T Class A is a non-adjustable relay, having one normally open contact.

Its most common application is to bridge the time interval between the picking up of the track relay on the track section in rear and the shunting of the track relay in the track section in advance, which may occur when a light engine or gas-electric car passes from one track section to the next at high speed.

This application prevents the momentary loss of track shunt and the loss of approach-locking, should this condition arise in an approach track section. It also prevents the loss of directional shunt in A.P.B. territory and the flashing of color light signals.

For typical circuit see Page 250.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Operating Voltage	Closing Time (Seconds) Normal Open Contact	Drawing Reference
A	8	4.5 to 5.5	53610–3 Gr. 1
A1	10	4.5 to 5.5	53610–3 Gr. 2
A2	10	9.5 to 10.5	53610–3 Gr. 5
A3	10	15 to 17	53610–3 Gr. 8
A4	8	19 to 21	53610–3 Gr. 3
A5	10	19 to 21	53610–3 Gr. 4

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
1	Cover, bakelite, for relay	29511–36
2	Gasket, for use between cover and glass	13014–76
3	Glass Case, for housing relay mechanism	37380–7
4	Finger Complete, for relay, has silver contact, for use in position shown	51336–5 Gr. 1
5	Finger Complete, includes thermal unit for relay, has silver contact, for use in position shown	51336–3 Gr. 1
6	Base, for relay	29510–9
7	Screw, No. 14-24 x 1¾″ sq. hd., used as terminal post for relay	48565–14

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY December 1936

Type T Class A

Thermal Relay

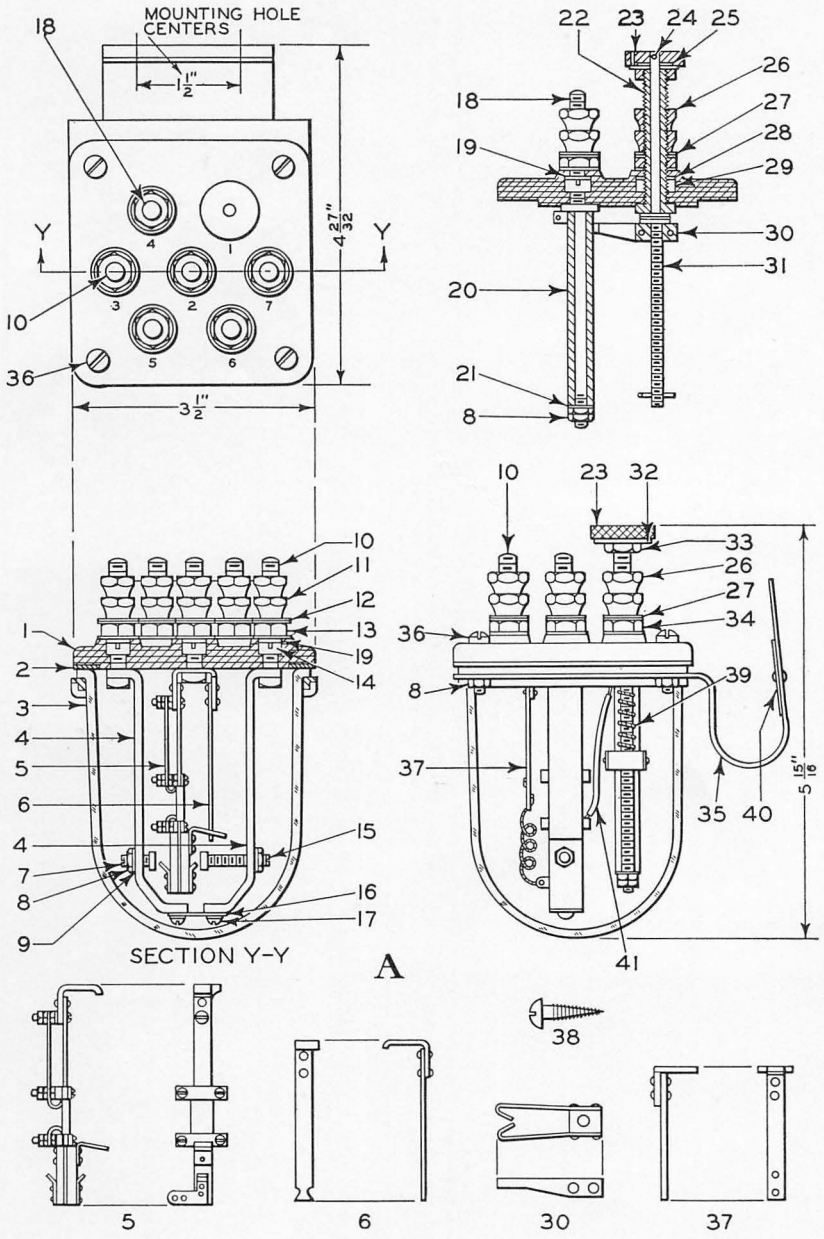
Non-Adjustable

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
8	Nut, No. 14-24 x $\frac{5}{16}$″ hex., for terminal post	42843–1
9	Washer, for terminal post	1225–2
10	Nut, No. 14-24 x $\frac{3}{16}$″ hex., for terminal post	42839–5
11	Spanner Nut, for terminal post	42840–3
12	Lock Washer, for terminal post	31267–2
13	Screw, No. 10-32 x $3\frac{13}{16}$″ rd. hd., for fastening base and glass case to cover. Drilled for seal	4372–6
14	Screw, No. 10-32 x $3\frac{13}{16}$″ rd. hd., for fastening base and glass case to cover	4372–5
15	Nut, No. 10-32 x $\frac{1}{8}$″ hex., for screws Figs. 13 and 14	40795
16	Washer, for screws Figs. 13 and 14	42312–1
17	Bracket, used for wall mounting	42827–8
18	Wood Screw, No. 8 x $\frac{3}{4}$″, for mounting relay	26514–1
19	Lead Washer, for terminal posts	1533–33
20	Name Plate, for relay	401–89

Memoranda

GENERAL RAILWAY SIGNAL COMPANY December 1936



Type T Class B Thermal Relay

Type T Class B

Thermal Relay

Adjustable

NOTE: The Type T Class B has one normally open and one normally closed contact, independent of one another. This relay is equipped with a voltage regulating resistor which will allow for variations in resistance.

This relay is commonly used in those circuits where a longer time delay is required, up to about 3 minutes, and also where every operation of the relay must be checked by a pair of normally closed contacts.

For typical circuit see Page 251.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Operating Voltage	Total Operating Time (Seconds)	Drawing Reference
A	12	59 to 61	53610–16 Gr. 1
A1	10	59 to 61	53610–16 Gr. 2
A2	9	85 to 95	53610–2 Gr. 7
A3	11	90 to 100	53610–2 Gr. 5
A4	10	100 to 110	53610–2 Gr. 8
A5	11	120 to 130	53610–2 Gr. 4
A6	12	120 to 140	53610–17 Gr. 5
A7	8.5	120 to 150	53610–2 Gr. 3
A8	10.5	120 to 150	53610–2 Gr. 1
A9	12.5	120 to 150	53610–2 Gr. 2
A10	24	120 to 150	53610–2 Gr. 6
A11	10	140 to 160	53610–17 Gr. 1
A12	9	180 to 210	53610–17 Gr. 4
A13	11.5	180 to 210	53610–17 Gr. 2
A14	12	180 to 210	53610–17 Gr. 6
A15	13.8	180 to 210	53610–17 Gr. 3

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY December 1936

Type T Class B

Thermal Relay

Adjustable

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
1	Cover, for relay	29511–46
2	Gasket, for use between cover and glass case	13014–124
3	Glass Case, for housing relay mechanism	37380–17
4	Support, for contacts Figs. 7 and 15	35921–68
5	Finger Complete, includes thermal unit. Specify timing of contacts.	51336–7 Gr. 1
6	Finger Complete, for use with thermal unit	51336–9 Gr. 1
7	Contact Complete, includes silver contact	51321 Gr. 1
8	Nut, No. 10-32 x 1/8″ hex., for contacts Figs. 7 and 15, for fastening resistance unit Fig. 20 to screw; and for screw Fig. 36	577–12
9	Lock Washer, for contacts Figs. 7 and 15	1601–49
10	Screw, No. 14-24 x 1¾″ sq. hd., for fastening supports Figs. 4 and 37 to cover, also for fastening fingers Figs. 5 and 6 to cover	350–5
11	Nut, No. 14-24 x 5/16″ hex., for screws Figs. 10 and 18	42843–1
12	Washer, for screws Figs. 10 and 18	1225–2
13	Nut, No. 14-24 x 3/16″ hex., for screws Figs. 10 and 18	42839–5
14	Spanner Nut, No. 14-24, for screws Figs. 10 and 18	42840–3
15	Contact Complete, includes silver contact	51321 Gr. 5
16	Insulator, for connecting bottom of supports Fig. 4	2539–45
17	Screw, No. 4-36 x 3/16″ rd. hd., with lock washer, for fastening insulator to supports Fig. 4	36206–1 53029–6
18	Screw, 4⅞″ lg., used as terminal post for resistance unit	376
19	Lead Washer, for terminal post Fig. 18	1533–33
20	Resistance Unit Complete, for relay	54333 Gr. 1
21	Washer, for resistance unit	5046–5
22	Bearing Screw, for resistance unit slider	54336
23	Knob, for adjusting screw Fig. 31	12439–15
24	Pin, 1/16″ dia. x 1″ lg., for fastening knob to adjusting screw Fig. 31.	27510
25	Spring Washer, for holding knob in position	1225–50
26	Nut, 5/16″-18 x 5/16″ hex., for bearing screw Fig. 22	42843–9

(*Continued on following page*)

December 1936 GENERAL RAILWAY SIGNAL COMPANY

Type T Class B

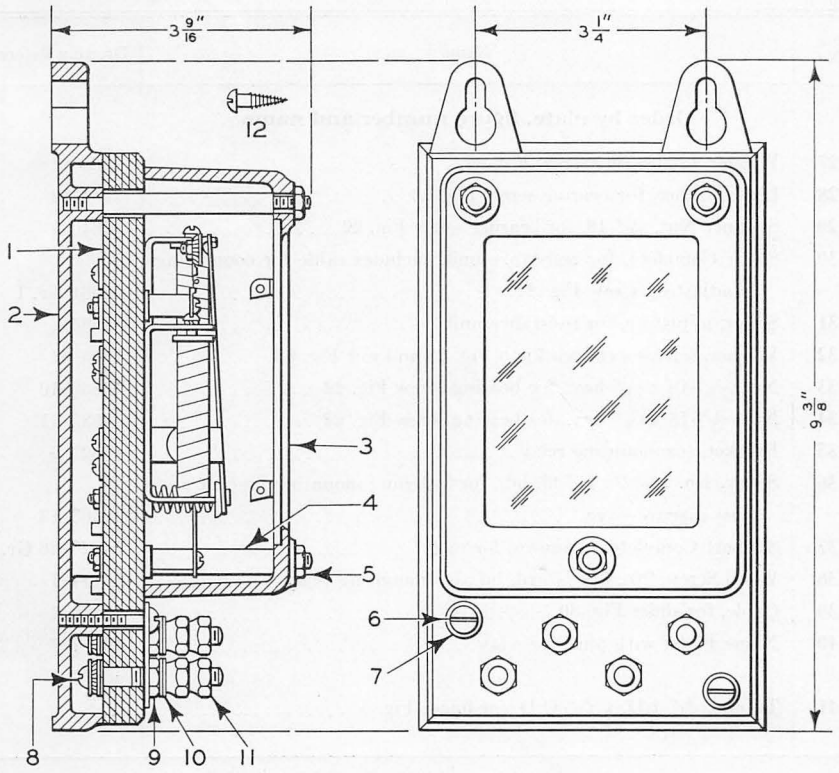
Thermal Relay

Adjustable

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
27	Washer, for bearing screw Fig. 22	1225–21
28	Lead Washer, for bearing screw Fig. 22	1533–34
29	Spanner Nut, $\frac{5}{16}$″-18, for bearing screw Fig. 22	42840–7
30	Slider Complete, for resistance unit, includes cable for connecting to adjusting screw Fig. 31	54334 Gr. 1
31	Screw, adjusting, for resistance unit	54335
32	Washer, for use between knob Fig. 23 and nut Fig. 33	1225–51
33	Nut, $\frac{5}{16}$″-18 x $\frac{1}{8}$″ hex., for bearing screw Fig. 22	42839–10
34	Nut, $\frac{5}{16}$″-18 x $\frac{3}{16}$″ hex., for bearing screw Fig. 22	46989–11
35	Bracket, for mounting relay	42827–5
36	Screw, No. 10-32 x $\frac{3}{4}$″ fil. hd., for fastening mounting bracket and glass case to cover	12563–13
37	Support Complete, as shown, for relay	51320–26 Gr. 1
38	Wood Screw, No. 8 x $\frac{3}{4}$″ rd. hd., for mounting relay	26514–1
39	Cable, for slider Fig. 30	51439–1
40	Name Plate, with pins, for relay	401–197 40797
41	Tubing, $\frac{1}{32}$″ I.D. x $\frac{3}{32}$″ O.D. for finger Fig. 5	

GENERAL RAILWAY SIGNAL COMPANY December 1936



A-B-C-D

Thermal Control Relay

December 1936 GENERAL RAILWAY SIGNAL COMPANY

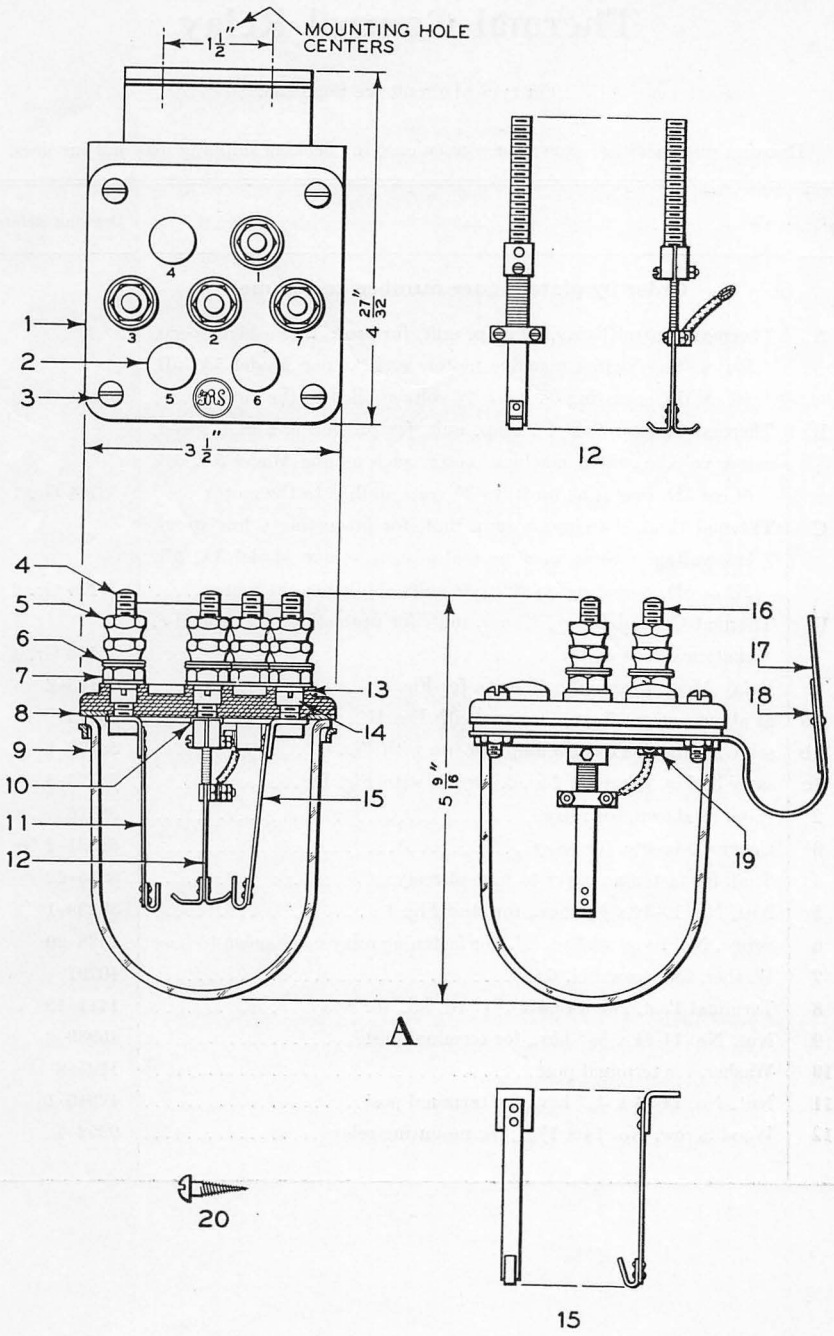
Thermal Control Relay

For typical circuit see Page 253.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Thermal Control Relay, 10 amp. unit, for protecting a high speed, low voltage switch machine motor, such as our Model 5A, 5B, 5C or 5D, operating on 25 to 32 volts applied to the motor	53174 Gr. 3
B	Thermal Control Relay, 7 amp. unit, for protecting a high speed, low voltage switch machine motor, such as our Model 5A, 5B, 5C or 5D, operating on 20 to 25 volts applied to the motor	53174 Gr. 1
C	Thermal Control Relay, 5 amp. unit, for protecting a low speed, low voltage switch machine motor such as our Model 5A, 5B, 5C or 5D, operating on 20 to 32 volts applied to the motor	53174 Gr. 2
D	Thermal Control Relay, 2 amp. unit, for protecting a 20 volt d-c. skate machine motor	53174 Gr. 4
1	Relay Mechanism only, 10 amp. for Fig. A	53175–2
1a	as above, except 7 amp. for use with Fig. B	53175
1b	same as Fig. 1, except 5 amp. for use with Fig. C	53175–1
1c	same as Fig. 1, except 2 amp. for use with Fig. D	53175–3
2	Base, as shown, for relay	53176
3	Cover Complete, for relay	52321–2 Gr. 1
4	Stud, for fastening cover to base of relay	8885–22
5	Nut, No. 10-32 x 1/8″ hex., for stud Fig. 4	38239–1
6	Screw, No. 10-32 x 1″ rd. hd., for fastening relay mechanism to base	2438–20
7	Washer, for screw Fig. 6	40791
8	Terminal Post, No. 14-24 x 1¾″ rd. hd., for relay	1411–19
9	Nut, No. 14-24 x 1/8″ hex., for terminal post	46989–2
10	Washer, for terminal post	1225–2
11	Nut, No. 14-24 x 5/16″ hex., for terminal post	42843–1
12	Wood Screw, No. 14 x 1¼″, for mounting relay	0252–4

PLATE E2507



Type T Class D Thermal Relay

Type T Class D

Thermal Relay

Non-Adjustable

NOTE: The Type T Class D has one normally open and one normally closed contact, dependent on each other.

This relay is used in those circuits where a short time delay and a normally closed checking contact are required.

For typical circuit see Page 251.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Operating Voltage	Total Operating Time (Seconds)	Drawing Reference
A	10	15 to 17	53610–10 Gr. 1

Fig. No.	Name	Drawing Reference
1	Cover, bakelite, for relay	29511–46
2	Plug, for vacant terminal post holes	55282
3	Screw, No. 10-32 x ¾″ fil. hd., with hex. nut, for fastening mounting bracket and glass case to cover	12563–13 577–12
4	Screw, No. 14-24 x 1¾″ sq. hd., terminal post for fingers Figs. 11 and 15	350–5
5	Nut, No. 14-24 x $\frac{5}{16}$″ hex., for terminal posts	42843–1
6	Washer, for terminal posts	1225–2
7	Nut, No. 14-24 x $\frac{3}{16}$″ hex., for terminal posts	42839–5
8	Gasket, for use between cover and glass case	13014–124
9	Glass Case, for housing relay mechanism	37380–17
10	Lock Washer, for finger Fig. 12	1225–76
11	Finger Complete, as shown, for relay	51336–12 Gr. 1
12	Finger Complete, as shown, for relay	51336–11 Gr. 1
13	Lead Washer, for spanner nut	1533–33
14	Spanner Nut, No. 14-24, for terminal posts	42840–3
15	Finger Complete, as shown, for relay	51336–13 Gr. 1
16	Screw, No. 14-24 x 1¾″, terminal post for cable on finger Fig. 12	38275–17

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY December 1936

Type T Class D

Thermal Relay

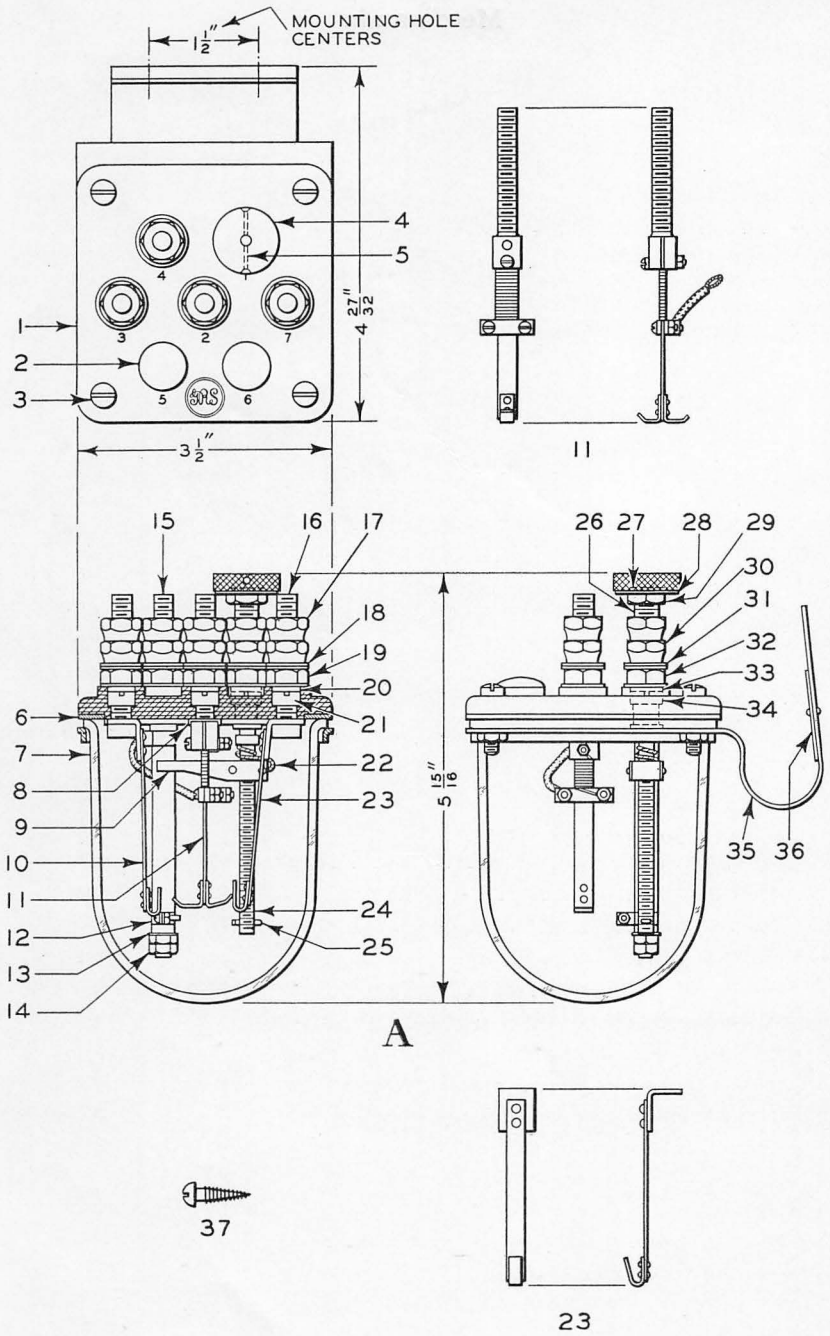
Non-Adjustable

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
17	Bracket, used for wall mounting	42827–5
18	Name Plate, with pins, for relay	401–167 40797
19	Screw, No. 6-32 x 5/8″ rd. hd., with hex. nut and washer, for fastening cable on finger Fig. 12 to terminal post Fig. 16	2613–18 37404–1 1225–82
20	Wood Screw, No. 8 x 3/4″ rd. hd., for mounting relay	26514–1

Memoranda

GENERAL RAILWAY SIGNAL COMPANY December 1936



Type T Class E Thermal Relay

Type T Class E

Thermal Relay

Adjustable

NOTE: The Type T Class E has one normally open and one normally closed contact, dependent on each other. This relay is equipped with a voltage regulating resistor which will allow for variations in voltage.

It may be used in any circuit that the Class D serves and is also recommended for those circuits subject to a fluctuating voltage.

For typical circuit see Page 251.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Operating Voltage	Total Operating Time (Seconds)	Drawing Reference
A	10	10 to 30	53610–11 Gr. 1
A1	12	15 to 16	53610–11 Gr. 3
A2	12	15 to 30	53610–11 Gr. 2

Fig. No	Name	Drawing Reference
1	Cover, bakelite, for relay	29511–46
2	Plug, for vacant terminal post holes	55282
3	Screw, No. 10-32 x ¾″ fil. hd., with hex. nut, for fastening mounting bracket and glass case to relay	12563–13 577–12
4	Knob, for adjusting screw Fig. 24	12439–15
5	Pin, $\frac{1}{16}$″ x 1″ lg., for knob Fig. 4	27510
6	Gasket, for use between glass case and cover	13014–124
7	Glass Case, for housing relay mechanism	37380–17
8	Lock Washer, for finger Fig. 11	1225–76
9	Slider Complete, for voltage regulating resistance	54334 Gr. 1
10	Finger Complete, as shown, for relay	51336–12 Gr. 1
11	Finger Complete as shown, for relay	51336–11 Gr. 1
12	Resistance Unit Complete, for relay	54333 Gr. 1
13	Washer, for nut Fig. 14	5046–5
14	Nut, No. 10-32 x ⅛″ hex., for screw on resistance unit	577–12
15	Screw, No. 14-24, for resistance unit	376

(*Continued on following page*)

GENERAL RAILWAY SIGNAL COMPANY December 1936

Type T Class E

Thermal Relay

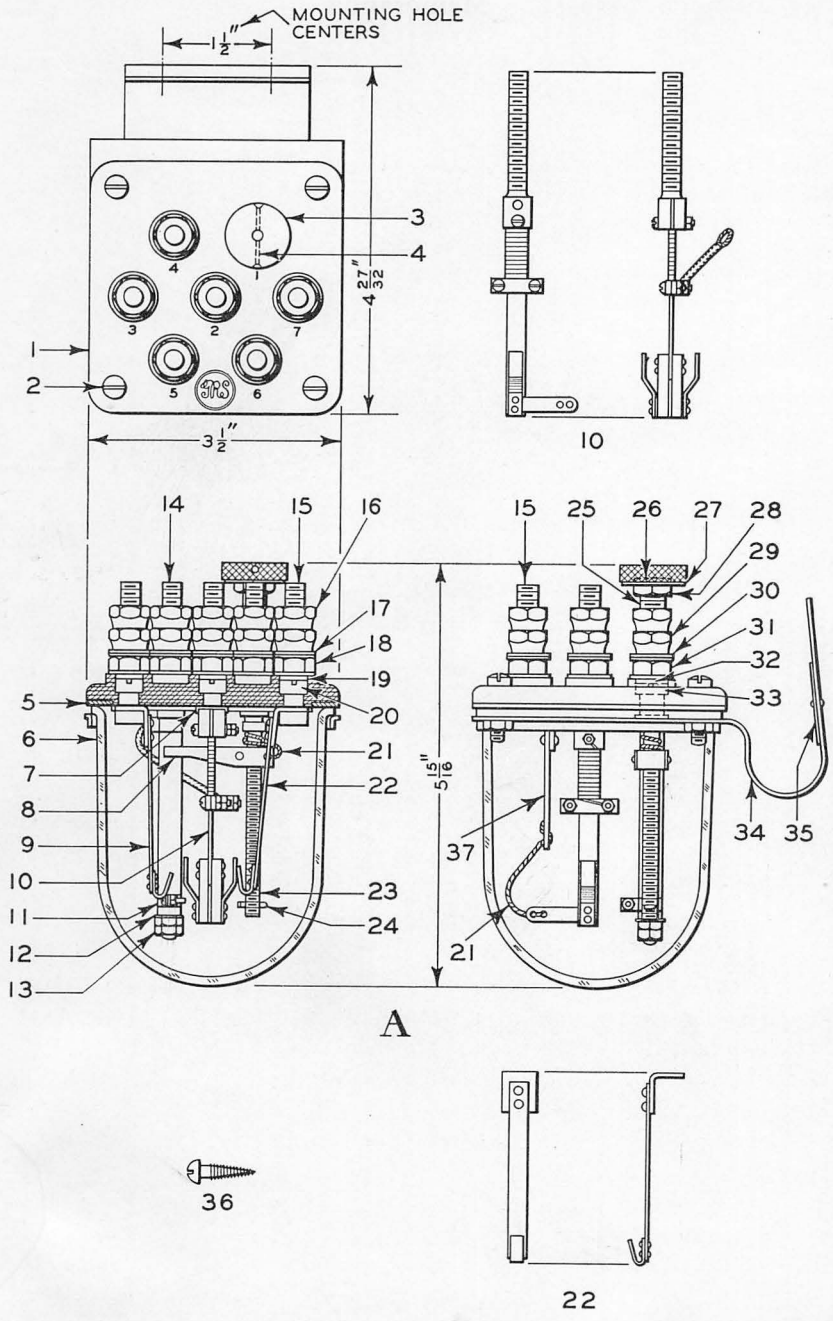
Adjustable

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
16	Screw, No. 14-24 x 1¾″ sq. hd., for fingers Figs. 10 and 23	350–5
17	Nut, No. 14-24 x 5/16″ hex., for terminal posts	42843–1
18	Washer, for terminal posts	1225–2
19	Nut, No. 14-24 x 3/16″ hex., for terminal posts	42839–5
20	Lead Washer, for terminal posts	1533–33
21	Spanner Nut, No. 14-24, for terminal posts	42840–3
22	Cable, for resistance unit	51349–1
23	Finger Complete, as shown, for relay	51336–13 Gr. 1
24	Adjusting Screw, for resistance unit	54335
25	Cotter Pin, 1/16″ x 3/8″ lg., for adjusting screw	0652–1
26	Bearing Screw, for resistance unit	54336
27	Washer, for bearing screw	1225–50
28	Washer, for knob	1225–51
29	Nut, 5/16″-18 x 1/8″ hex., for bearing screw	42839–10
30	Nut, 5/16″-18 x 5/16″ hex., for bearing screw	42843–9
31	Washer, for bearing screw	1225–21
32	Nut, 5/16″-18 x 3/16″ hex., for bearing screw	46989–11
33	Lead Washer, for bearing screw	1533–34
34	Spanner Nut, 5/16″-18, for bearing screw	42840–7
35	Bracket, for wall mounting relay	42827–5
36	Name Plate, with pins, for relay	401–167 40797
37	Wood Screw, No. 8 x ¾″ rd. hd., for mounting relay	26514–1

Memoranda

PLATE E2511



Type T Class F Thermal Relay

Type T Class F
Thermal Relay
Adjustable

NOTE: The Type T Class F has one normally open and one normally closed contact, independent of one another. This relay is equipped with a voltage regulating resistor which will allow for variations in voltage.

It has a short time delay and is recommended for highway crossing circuits requiring two timings, one for slow trains and one for fast trains.

For typical circuit see Page 252.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Operating Voltage	Total Operating Time (Seconds)	Drawing Reference
A	10	25 to 45	53610–13 Gr. 2
A1	11.5	25 to 45	53610–13 Gr. 1

Fig. No.	Name	Drawing Reference
1	Cover, bakelite, for relay	29511–46
2	Screw, No. 10-32 x ¾″ fil. hd., with hex. nut, for fastening mounting bracket and glass case to relay	12563–13 577–12
3	Knob, for adjusting screw Fig. 23	12439–15
4	Pin, $\frac{1}{16}$″ x 1″ lg., for knob Fig. 3	27510
5	Gasket, for use between glass case and cover	13014–124
6	Glass Case, for housing relay mechanism	37380–17
7	Lock Washer, for finger Fig. 10	1225–76
8	Slider Complete, for voltage regulating resistance	54334 Gr. 1
9	Finger Complete, as shown, for relay	51336–12 Gr. 1
10	Finger Complete, as shown, for relay	51336–11 Gr. 2
11	Resistance Unit Complete, for relay	54333 Gr. 1
12	Washer, for nut Fig. 13	5046–5
13	Nut, No. 10-32 x ⅛″ hex., for screw on resistance unit	577–12
14	Screw, No. 14-24, for resistance unit	376
15	Screw, No. 14-24 x 1¾″ sq. hd., for fingers Figs. 9 and 22, also for supports Fig. 37	350–5
16	Nut, No. 14-24 x $\frac{5}{16}$″ hex., for terminal posts	42843–1

(*Continued on following page*)

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Type T Class F

Thermal Relay

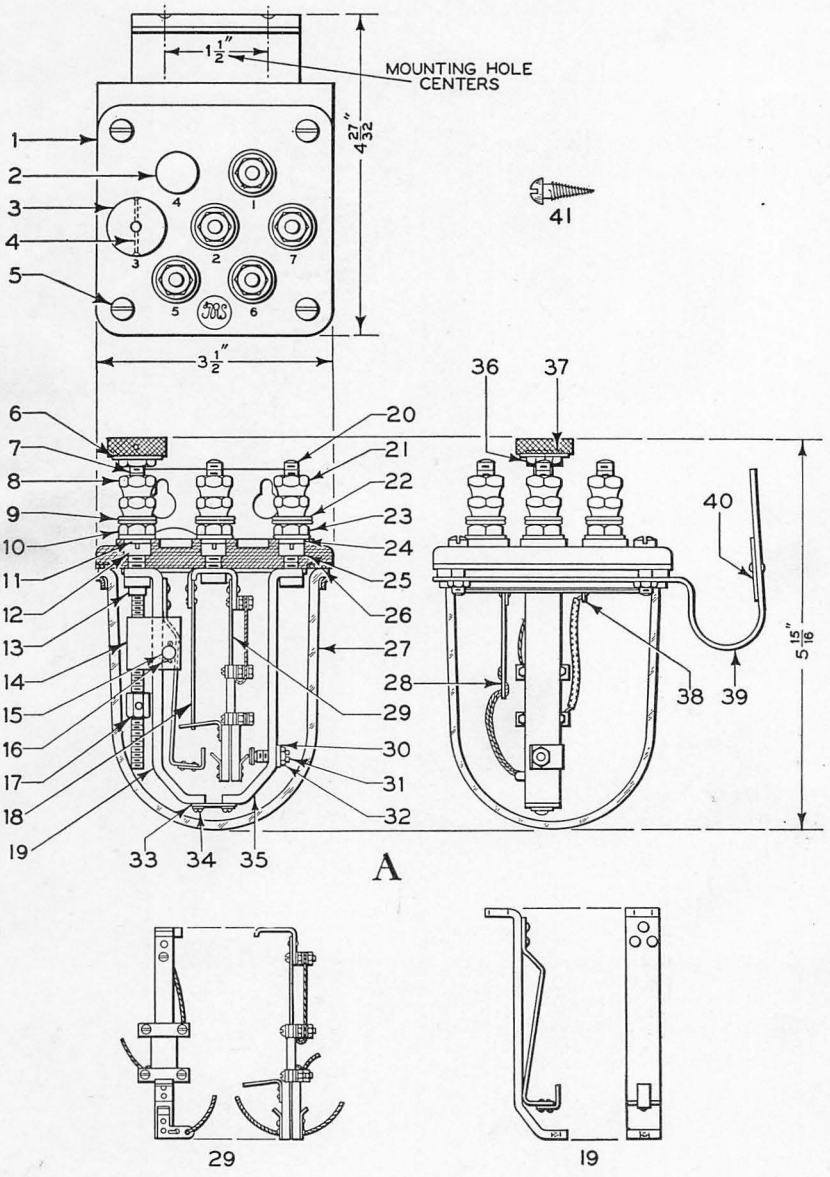
Adjustable

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
17	Washer, for terminal posts	1225–2
18	Nut, No. 14-24 x $\frac{3}{16}$″ hex., for terminal posts	42839–5
19	Lead Washer, for terminal posts	1533–33
20	Spanner Nut, No. 14-24, for terminal posts	42840–3
21	Cable, for resistance unit	51439–1
22	Finger Complete, as shown, for relay	51336–13 Gr. 1
23	Adjusting Screw, for resistance unit	54335
24	Cotter Pin, $\frac{1}{16}$″ x $\frac{3}{8}$″ lg., for adjusting screw	0652–1
25	Bearing Screw, for resistance unit	54336
26	Washer, for bearing screw	1225–50
27	Washer, for knob	1225–51
28	Nut, $\frac{5}{16}$″-18 x $\frac{1}{8}$″ hex., for bearing screw	42839–10
29	Nut, $\frac{5}{16}$″-18 x $\frac{5}{16}$″ hex., for bearing screw	42843–9
30	Washer, for bearing screw	1225–21
31	Nut, $\frac{5}{16}$″-18 x $\frac{3}{16}$″ hex., for bearing screw	46989–11
32	Lead Washer, for bearing screw	1533–34
33	Spanner Nut, $\frac{5}{16}$″-18, for bearing screw	42840–7
34	Bracket, for wall mounting relay	42827–5
35	Name Plate, with pins, for relay	401–167 40797
36	Wood Screw, No. 8 x $\frac{3}{4}$″ rd. hd., for mounting relay	26514–1
37	Support Complete, as shown, for relay	51320–26 Gr. 1

Memoranda

PLATE E2513



Type T Class G Thermal Relay

Type T Class G
Thermal Relay
Adjustable

NOTE: The Type T Class G has one normally open and one normally closed contact, independent of each other. It also has an externally adjustable contact by which the timing may be varied in the field to suit the requirements of the installation.

This relay can be used in those circuits that the Type T Class B serves, however, the externally adjusted contact gives it a much wider variation in timing and, for this reason, it is recommended for those circuits which require a different timing for different locations, depending on the operating conditions.

For typical circuit see Page 252.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Operating Voltage	Total Operating Time (Seconds)	Drawing Reference
A1	8	60 to 90	53610–19 Gr. 4
A2	9	90 to 95	53610–20 Gr. 1
A3	10	95 to 105	53610–19 Gr. 1
A4	11	95 to 105	53610–19 Gr. 5
A5	10	120 to 130	53610–19 Gr. 2
A6	10	180 to 200	53610–19 Gr. 6

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
1	Cover, for relay	29511–60
2	Plug, for vacant terminal post holes	55282
3	Knob, for adjusting screw Fig. 13	12439–15
4	Pin, $\frac{1}{16}$″ x 1″ lg., for fastening knob Fig. 3 to screw Fig. 13	27510
5	Screw, No. 10-32 x $\frac{3}{4}$″ fil. hd., with hex. nut, for fastening mounting bracket and glass case to cover	12563–13 577–12
6	Washer, for knob Fig. 3	1225–51
7	Bearing Screw, for adjusting front contact	54336

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY December 1936

Type T Class G

Thermal Relay

Adjustable

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
8	Nut, $\frac{5}{16}$"-18 x $\frac{5}{16}$" hex., for screw Fig. 7	42843–9
9	Washer, for screw Fig. 7	1225–21
10	Nut, $\frac{5}{16}$"-18 x $\frac{3}{16}$" hex., for screw Fig. 7	46989–11
11	Lead Washer, for screw Fig. 7	1533–34
12	Spanner Nut, $\frac{5}{16}$"-18, for screw Fig. 7	42840–7
13	Adjusting Screw, for bearing screw Fig. 7	54335
14	Adjusting nut, for front contact	29536–5
15	Pin, $\frac{1}{4}$" x $\frac{15}{16}$", for adjusting nut Fig. 14	15350–34
16	Cotter Pin, $\frac{1}{16}$" x $\frac{3}{8}$", for fastening pin Fig. 15 to nut Fig. 14	0652–1
17	Nut, No. 10-32 x $\frac{3}{8}$" hex., with cotter pin, for adjusting screw Fig. 13	13078–1 0677–2
18	Finger Complete, for relay	51336–9 Gr. 2
19	Support Complete, for relay	51320–45 Gr. 1
20	Screw, No. 14-24 x $1\frac{3}{4}$" sq. hd., terminal post for relay	350–5
21	Nut, No. 14-24 x $\frac{5}{16}$" hex., for terminal post Fig. 20	42843–1
22	Washer, for terminal post Fig. 20	1225–2
23	Nut, No. 14-24 x $\frac{3}{16}$" hex., for terminal post	42839–5
24	Lead Washer, for terminal post Fig. 20	1533–33
25	Spanner Nut, No. 14-24, for terminal post Fig. 20	42840–3
26	Gasket, for use between cover and glass case	13014–124
27	Glass Case, for relay	37380–17
28	Support Complete, for relay	51320–26 Gr. 1
29	Finger Complete, as shown, for relays Figs. A, A3, A4, A5 and A6	51336–18 Gr. 2
29a	as above, except for relay Fig. A1	51336–18 Gr. 3
29b	same as Fig. 29, except for relay Fig. A2	51336–18 Gr. 1
30	Lock Washer, for nut on contact Fig. 31	1601–49
31	Contact Complete, for relay	51321 Gr. 1
32	Nut, No. 10-32 x $\frac{1}{8}$" hex., for contact Fig. 31	577–12

(*Continued on following page*)

December 1936 GENERAL RAILWAY SIGNAL COMPANY

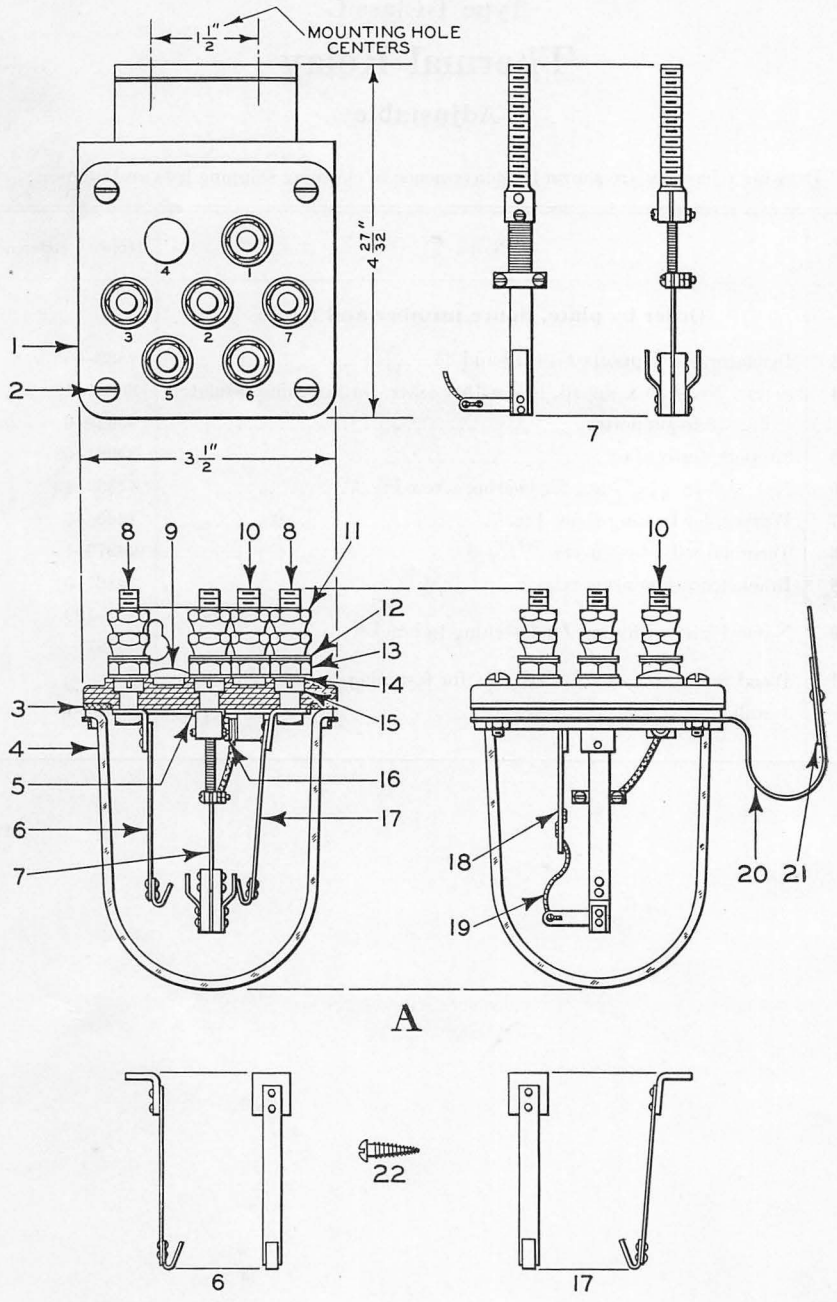
Type T Class G

Thermal Relay

Adjustable

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
33	Insulator, for supports Figs. 18 and 35	2539–45
34	Screw, No. 4-36 x $\frac{3}{16}$″ rd. hd., with washer, for fastening insulator Fig. 33 to supports	36026–1 53029–6
35	Support, for contact	35921–68
36	Nut, $\frac{5}{16}$″-18 x $\frac{1}{8}$″ hex., for bearing screw Fig. 7	42839–10
37	Washer, for bearing screw Fig. 7	1225–50
38	Terminal only, for fingers	28979–1
39	Bracket, for mounting relay	42827–5
40	Name Plate, with pins, for fastening to bracket	401–199 40797
41	Wood Screw, No. 8 x $\frac{3}{4}$″ rd. hd., for fastening bracket Fig. 39 to wall	26514–1



Type T Class H Thermal Relay

Type T Class H

Thermal Relay

Non-Adjustable

NOTE: The Type T Class H has one normally open and one normally closed contact, independent of one another.

It may be used in any circuit that the Class F serves where a voltage regulator is not required. For typical circuit see Page 252.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Operating Voltage	Total Operating Time (Seconds)	Drawing Reference
A	10	15 to 17	53610–21 Gr. 1

Fig. No.	Name	Drawing Reference
1	Cover, bakelite, for relay	29511–46
2	Screw, No. 10-32 x ¾″ fil. hd., with hex. nut, for fastening mounting bracket and glass case to relay	12563–13 577–12
3	Gasket, for use between glass case and cover	13014–124
4	Glass Case, for housing relay mechanism	37380–17
5	Lock Washer, for finger Fig. 7	1225–76
6	Finger Complete, as shown, for relay	51336–12 Gr. 1
7	Finger Complete, as shown, for relay	51336–11 Gr. 2
8	Screw, No. 14-24 x 1¾″ sq. hd., for fingers Figs 6 and 17, also for supports Fig. 18	350–5
9	Plug, for vacant terminal post holes	55282
10	Screw, No. 14-24 x 1¾″, terminal for heater unit	38275–17
11	Nut, No. 14-24 x 5/16″ hex., for terminal posts	42843–1
12	Washer, for terminal posts	1225–2
13	Nut, No. 14-24 x 3/16″ hex., for terminal posts	42839–5
14	Lead Washer, for terminal posts	1533–33
15	Spanner Nut, No. 14-24, for terminal posts	42840–3
16	Screw, No. 6-32 x ⅝″ fil. hd., with nut and washer, for fastening cable of heater unit to terminal post	2613–18 37404–1 1225–82

(*Continued on following page*)

GENERAL RAILWAY SIGNAL COMPANY December 1936

Type T Class H

Thermal Relay

Non-Adjustable

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
17	Finger Complete, as shown, for relay	51336–13 Gr. 1
18	Support Complete, as shown, for relay	51320–26 Gr. 1
19	Cable, 3″ long, for heater unit	51349–1
20	Bracket, for wall mounting relay	42827–5
21	Name Plate, with pins, for relay	401–200 40797
22	Wood Screw, No. 8 x ¾″ rd. hd., for mounting relay	26514–1

Section E, Part 24

Type W
Relays

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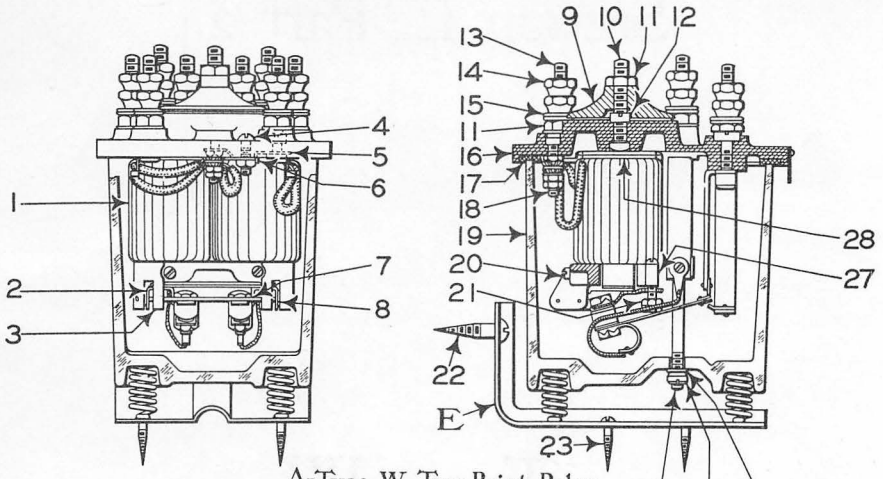
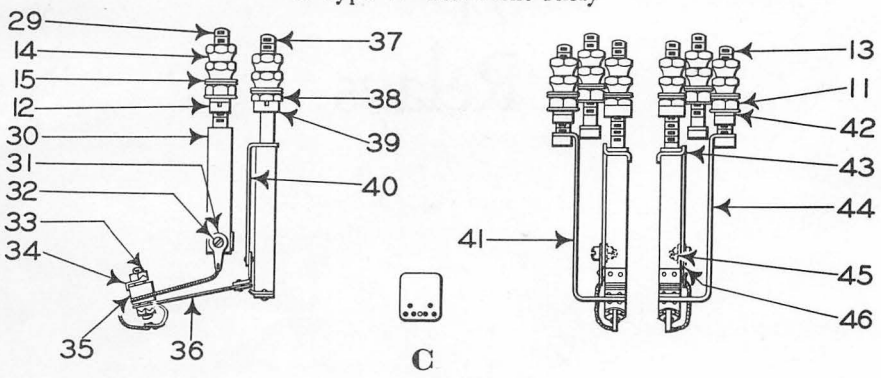
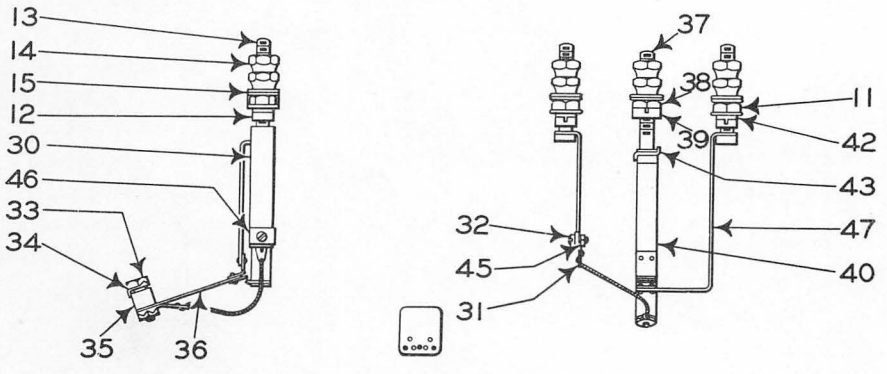


A-Type W Two Point Relay
B-Type W One Point Relay



C



D

Type W, Direct Current Relay
Size Two

Feb. 1931 GENERAL RAILWAY SIGNAL COMPANY

Type W Relay

Direct Current

Size 2 Class A

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Type W Relay Complete, direct current, two point, has silver to silver dependent front and back contacts. Specify resistance of relay required, also give information as to type of circuit in which relay is to be used. Does not include bracket, Fig. E, which must be specified separately	54251 Gr. 1
B	Type W Relay Complete, direct current, one point, has silver to silver dependent front and back contacts. Specify resistance of relay required, also give information as to type of circuit in which relay is to be used. Does not include bracket, Fig. E, which must be specified separately	54251 Gr. 2
C	Contact Group Complete, as shown, has silver to silver dependent front and back contacts, for relay, Fig. A. Includes all parts for adding or replacing contact group. For use in spaces as shown in diagram	54255 Gr. 1
D	Contact Group Complete, as shown, has silver to silver dependent front and back contacts, for relay, Fig. B. Includes all parts for adding or replacing contact group. For use in spaces as shown in diagram	54255-2 Gr. 1
E	Bracket Complete, as shown, for mounting relay to shelf or wall	42819 Gr. 1
1	Coil, for relay, specify resistance	31066-37
2	Armature Complete, as shown, for relay, has brass armature support	29524-15 Gr. 1
2a	as above, except has aluminum armature support	29524-15 Gr. 2
3	Bracket, for supporting armature	53016-8
4	Screw, No. 10-32 x 5/8" rd. hd., with hex. nut, for fastening contact spring, Fig. 6 to cover	2829-2 577-12
5	Contact Spring, as shown, for relay	32242-7
6	Contact Spring, as shown, for relay	32242-6
7	Pin, for fastening armature to bracket	47230-5
8	Washer, for use between armature and bracket	33776

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY Feb. 1931

Type W Relay

Direct Current

Size 2 Class A

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
9	Yoke, as shown, for relay	54260-1
10	Screw, No. 14-24 x 1½″ sq. hd., for fastening yoke, Fig. 9 to cover	350-3
11	Nut, No. 14-24 x 3/16″ hex., for screw, Fig. 10, also for terminal posts, Figs. 13 and 29	42839-5
12	Spanner Nut, for screw Fig. 10, also for terminal posts, Figs. 13 and 29	42840-3
13	Screw, No. 14-24 x 1⅝″ sq. hd., used as terminal post for relay	350-4
14	Nut, No. 14-24 x 5/16″ hex., for terminal posts, Figs. 13, 29 and 37	42843-1
15	Washer, for terminal posts, Figs. 13, 29 and 37	1225-2
16	Cover, bakelite, for relay	29511-42
17	Gasket, for use between glass case and relay cover	13014-106
18	Screw, No. 10-32 x 1″ sq. hd., with nut and washer, used as terminal post for coils	50973-3 5046-5 577-12
19	Glass Case, for housing relay mechanism	37380-15
20	Screw, No. 8-32 x 1⅜″ fil. hd., for fastening brackets, Figs. 3 and 27 to core	28989-6
21	Nut, No. 6-32 x ⅛″ hex., for screw on bracket, Fig. 27	37404-1
22	Wood Screw, No. 14 x 1¼″ rd. hd., for mounting bracket to wall	0252-4
23	Wood Screw, No. 8 x ⅝″ rd. hd., for mounting bracket to shelf	0917-4
24	Screw, No. 10-32 x 4 7/16″ sq. hd., for fastening glass case to cover	29151-14
25	Nut, No. 10-32 rd., for screw, Fig. 24	846-10
26	Washer, leather, for screw, Fig. 24	1533-28
27	Bracket Complete, as shown, for relay. For use in position shown	54320 Gr. 1
28	Felt Washer, for use between coils and relay cover	1533-27
29	Screw, No. 14-24 x 1¾″ sq. hd., used as terminal post for contact group, Fig. C	350-5
30	Terminal, as shown, for contact groups, Figs. C and D	51559-37
31	Connector Complete, for contact groups, Figs. C and D	42760-23 Gr.2

(Continued on following page)

Type W Relay

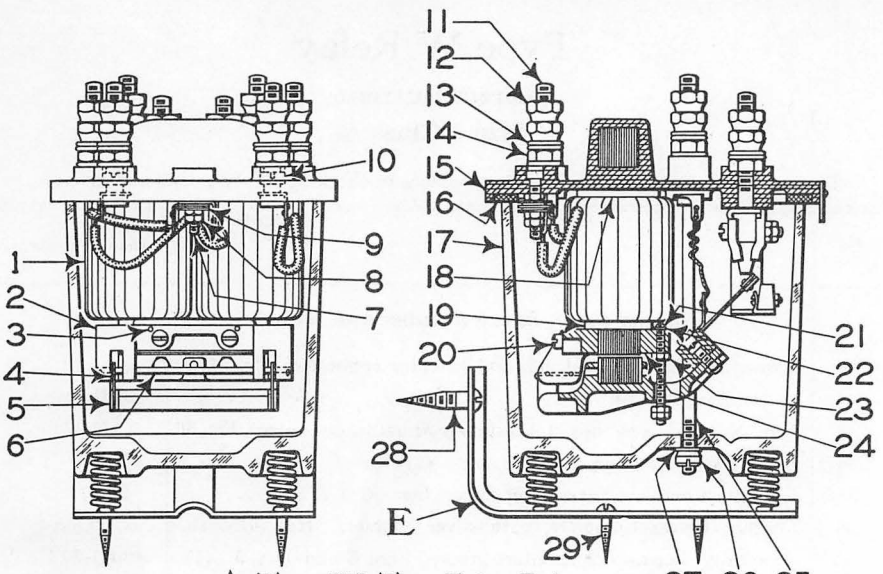
Direct Current

Size 2 Class A

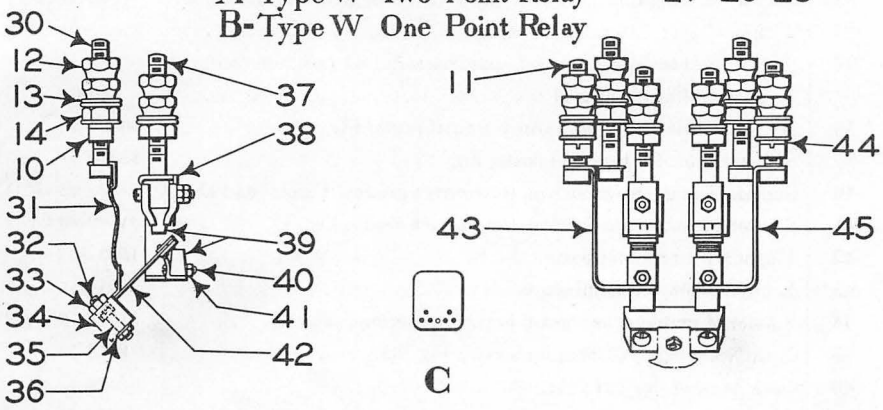
Drawing references are shown for convenience in checking shipping lists and invoices.

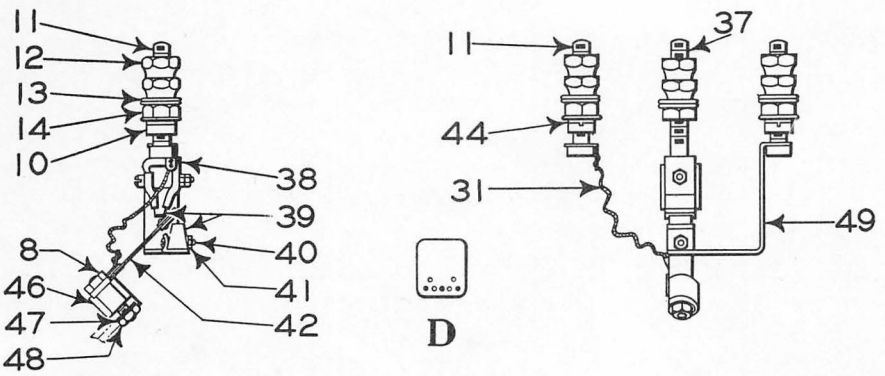
Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
32	Screw, No. 6-32 x 1/4" fil. hd., for fastening connector, Fig. 31 to terminal Fig. 30	3931-6
33	Nut, No. 10-32 x 1/8" hex., for fastening armature to contact, Fig. 36	577-12
34	Lock Washer, for nut, Fig. 33	53029-7
35	Insulator Complete, for contact finger, Fig. 36	42792
36	Contact Finger Complete, with silver contact. Has .015" th. spring. For use with contact groups, Figs. C and D	13061-22 Gr. 1
36a	as above, except has .018" th. spring. For use with contact group, Fig. C	13061-22 Gr. 2
37	Screw, No. 14-24 x 1 7/8" sq. hd., used as terminal post for contact groups, Figs. C and D	350-6
38	Nut, No. 14-24 x 1/8" hex., for terminal posts, Fig. 37	46989-2
39	Spanner Nut, for terminal posts, Fig. 37	42840-5
40	Support Complete, as shown, for contact groups, Figs. C and D	51320-22 Gr. 1
41	Support Complete, as shown, for contact group, Fig. C	51320-20 Gr. 1
42	Washer, for terminal posts	1533-33
43	Lock Washer, for terminal posts	1601-53
44	Support Complete, as shown, for contact group, Fig. C	51320-19 Gr. 1
45	Nut, No. 6-32 x 1/8" hex., for screw, Fig. 32	3614-1
46	Lock Washer, for nut, Fig. 45	50616-4
47	Support Complete, as shown, for contact group, Fig. D	51320-21 Gr. 1

GENERAL RAILWAY SIGNAL COMPANY Feb. 1931



A-Type W Two Point Relay
B-Type W One Point Relay





Type W, Alternating Current Relay
Size Two

Feb. 1931 GENERAL RAILWAY SIGNAL COMPANY

Type W Relay

Alternating Current
Size 2 Class B

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Type W Relay Complete, alternating current, two point, has universal dependent front and back contacts. Specify resistance of relay required or give voltage and frequency on which relay is to operate, also give information as to type of circuit in which relay is to be used. Does not include bracket, Fig. E which must be specified separately	54250 Gr. 1
A1	as above, except has silver to silver dependent front and back contacts	54250 Gr. 1
B	Type W Relay Complete, alternating current, one point, has universal dependent front and back contacts. Specify resistance of relay required, also give information as to type of circuit in which relay is to be used. Does not include bracket, Fig. E which must be specified separately	54250 Gr. 1
B1	as above, except has silver to silver dependent front and back contacts	54250 Gr. 1
C	Contact Group Complete, as shown, has universal dependent front and back contacts, for relay, Fig. A. Includes all parts for adding or replacing contact group. For use in spaces as shown in diagram	54256 Gr. 2
C1	as above, except has silver to silver contacts	54256 Gr. 1
C2	same as Fig. C except has universal front and silver to silver back contacts	54256 Gr. 3
D	Contact Group Complete, as shown, has universal dependent front and back contacts, for relay, Fig. B. Includes all parts for adding or replacing contact group. For use in spaces as shown in diagram	54256-1 Gr. 2
D1	as above, except has silver to silver contacts	54256-1 Gr. 1
E	Bracket Complete, as shown, for mounting relay to shelf or wall	42819 Gr. 1
1	Coil, for relay, specify resistance	31066-36
2	Bracket, for supporting armature	53016-7

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY Feb. 1931

Type W Relay

Alternating Current

Size 2 Class B

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
3	Pin, .067″ dia. x 5/8″ lg., as shown, for fastening bracket to core	504-240
4	Washer, for use between bracket, Fig. 2 and armature	33776
5	Armature Complete, as shown, for relay	54253 Gr. 1
6	Pin, for fastening armature to bracket	47230-5
7	Screw, No. 10-32 x 1″ sq. hd., used as terminal post for coils	50973-3
8	Nut, No. 10-32 x 1/8″ hex., for terminal post, Fig. 7 and insulator, Fig. 46	577-12
9	Washer, for terminal post, Fig. 7	5046-5
10	Spanner Nut, No. 14-24 for terminal posts, Figs. 11 and 30	42840-3
11	Screw, No. 14-24 x 1 5/8″ sq. hd., used as terminal post for relay and contact groups, Figs. C and D	350-4
12	Nut, No. 14-24 x 5/16″ hex., for terminal posts, Figs. 11, 30 and 37	42843-1
13	Washer, for terminal posts, Figs. 11, 30 and 37	1225-2
14	Nut, No. 14-24 x 3/16″ hex., for terminal posts, Figs. 11, 30 and 37	42839-5
15	Cover, bakelite, as shown, for relay	29511-44
16	Gasket, as shown, for use between glass case and cover	13014-106
17	Glass Case, as shown, for housing relay mechanism	37380-15
18	Felt Washer, for use between cover and coils	1533-27
19	Ring, brass, as shown, for use between coils and bracket, Fig. 2	51955-4
19a	as above, except copper	51955-7
20	Screw, No. 8-32 x 1 3/8″ fil. hd., for fastening brackets, Figs. 2 and 24 to core	28989-6
21	Screw, No. 6-32 x 1 1/2″ rd. hd., used as stop for armature	2613-6
22	Lock Washer, for screw, Fig. 21	48526-1
23	Nut, No. 6-32 x 1/8″ hex., for screw, Fig. 21	3614-1
24	Bracket, as shown, for relay. For use in position shown	47754-56
25	Screw, No. 10-32 x 4 7/16″ sq. hd., for fastening glass case to cover	29151-14
26	Nut, No. 10-32, rd., for screw, Fig. 25	846-10
27	Washer, leather, for screw, Fig. 25	1533-28

(Continued on following page)

Type W Relay

Alternating Current

Size 2 Class B

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
28	Wood Screw, No. 14 x 1¼″ rd. hd., for mounting bracket to wall.	0252-4
29	Wood Screw, No. 8 x ⅝″ rd. hd., for mounting bracket to shelf...	0917-4
30	Screw, No. 14-24 x 1¾″ sq. hd., used as terminal post for contact group Fig. C.....	350-5
31	Connector Complete, as shown, for contact groups, Figs. C and D.	42760-23 Gr. 3
32	Screw, No. 8-32 x ½″ rd. hd., for fastening contact fingers to block, Fig. 34.....	3827-2
33	Nut, No. 8-32 x ⅛″ hex., for screws, Figs. 32 and 35.....	3891-1
34	Block, as shown, for contact fingers.....	47508-59
35	Screw, No. 8-32 x 7/16″ fil. hd., for fastening block, Fig. 34 to armature	28989-1
36	Lock Washer, for screws, Figs. 32 and 35.....	43058
37	Screw, No. 14-24, as shown, used as terminal post for front contact on contact groups, Figs. C and D.....	38275-12
38	Holder Complete, as shown, for front contact.....	53018 53018-1 3931-4 37404-1
39	Front or Back Contact, universal, as shown.....	13026~~-17~~ 26
39a	as above, except silver.....	51321-13 Gr. 1
40	Screw, No. 4-36 x 7/16″ rd. hd., for fastening back contact to supports, Figs. 43, 45 and 49.....	33821-1
41	Nut, No. 4-36 x 3/32″ hex., for screw, Fig. 40.....	12680-4
42	Contact Finger Complete, with silver contacts. Has .015″ th. spring. For use with contact group, Fig. C.....	13061-23 Gr. 1
42a	as above, except has .020″ th. spring, for contact groups, Figs. C and D.....	13061-23 Gr. 2
43	Support, left hand, for supporting back contact. For contact group, Fig. C.....	35921-41
44	Washer, for screws, Figs. 11 and 30.....	1533-33

(Continued on following page)

Type W Relay

Alternating Current

Size 2 Class B

Drawing references are shown for convenience in checking shipping lists and invoices.

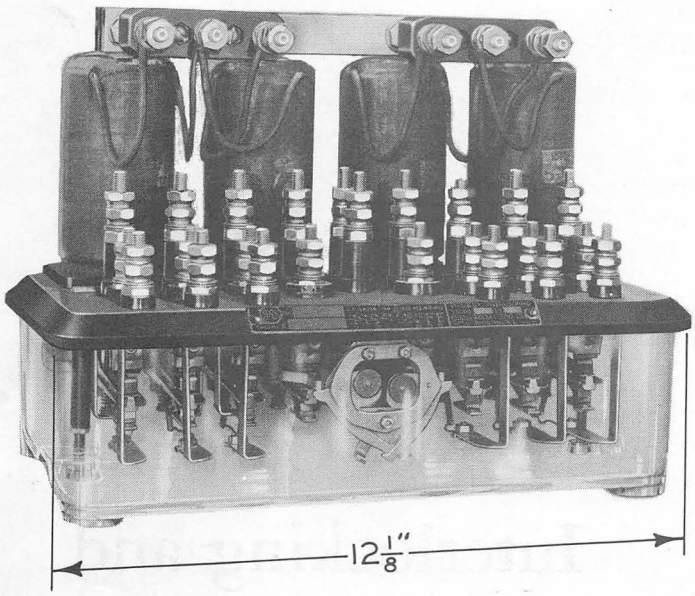
Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
45	Support, right hand, for supporting back contacts. For contact group, Fig. C	35921-40
46	Insulator Complete, as shown, for supporting contact fingers, Fig. 42. For Fig. D	42792-7
47	Lock Washer, for screw on insulator	53029-17
48	Nut, No. 10-32 x 5/32" hex., for fastening insulator to armature	577-8
49	Support, right hand, for supporting back contact. For contact group, Fig. D	35921-42

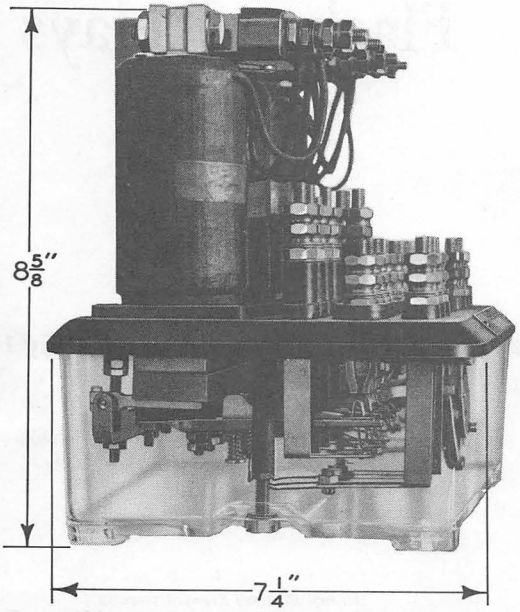
Section E, Part 23

Type K Tractive-Armature Direct-Current Interlocking and Flasher Relays

Supersedes Section E, Part 23, dated July 1949

General Railway Signal Company
Printed in U. S. A.





Type K, Direct-Current, Interlocking Relay
Size Eight

Type K, Tractive-Armature Direct-Current Interlocking Relays

Foreword

Type K Direct-Current Interlocking Relays are of the same high quality in every respect as Type K Neutral and Polarized Relays and they fully meet A.A.R. Requirements.

The Type K Interlocking Relay consists of two Size 4 neutral relays mounted side by side on a common bakelite top with a simple and efficient means of interlocking inserted between the armatures.

The interlocking arrangement is such that when the first armature drops, all front contacts operated by it are fully opened and its back contacts are closed with full pressure; a locking dog being moved into position to hold the second armature in an intermediate position. Then when the second armature drops it is held in an intermediate position until its coils are again energized.

Unless otherwise specified the contacts will be adjusted so that both front and back contacts will be open not less than .030″ with the armature in the intermediate position. This is the arrangement for controlling the flashing light type of highway crossing signal on single track.

When specified the front contacts will be adjusted to remain closed with the armature in the intermediate position. This is the arrangement employed to control a highway crossing signal which displays a proceed indication when no train is approaching.

When specified a special back contact may be provided which will close with the armature in the intermediate position. This contact is sometimes employed in the control of automatic interlocking circuits.

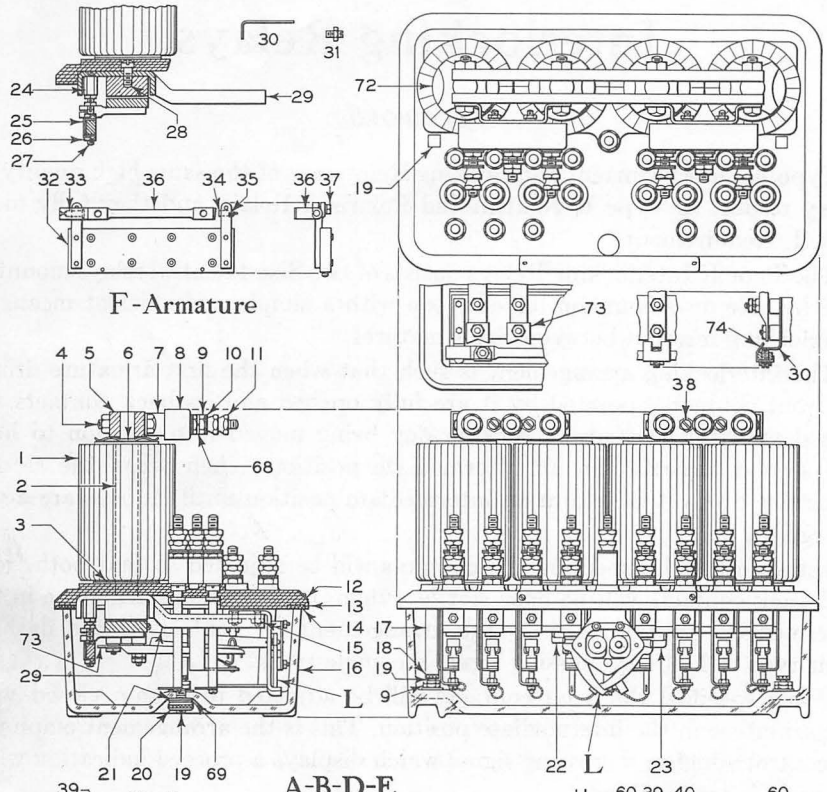
Type K Interlocking Relays have silver-impregnated carbon to silver front contacts and silver to silver back contacts. Unless otherwise specified contacts are adjusted for low voltage circuits (1st range voltages).

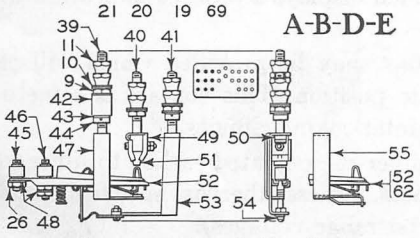
Silver-impregnated carbon to silver contacts, when adjusted to the proper opening may be used for either low or high voltage circuits (1st and 2nd range voltages). If contacts are to break 110 volt circuits (2nd range), please specify when ordering so that proper opening may be provided.

All interlocking relays are regularly supplied with a full complement of contacts, i. e., each armature has 4 dependent front and back contacts.

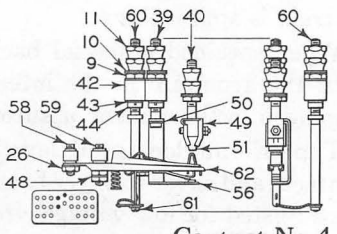
See Section E Part 21 for other information relative to current carrying capacity and description of contacts, mounting of relays, etc.

GENERAL RAILWAY SIGNAL COMPANY April 1952

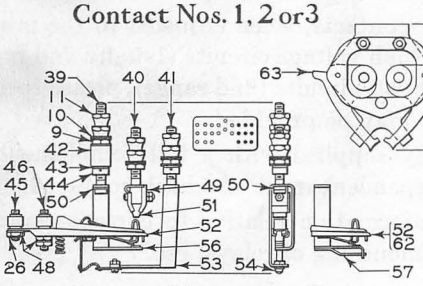




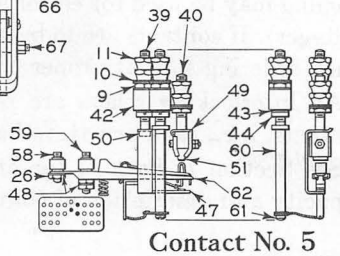
Contact Nos. 1, 2 or 3



Contact No. 4



Contact Nos. 6, 7 or 8



Contact No. 5

Type K, Direct-Current, Interlocking Relay
Size Eight

Type K Direct-Current
Interlocking Relay
Size 8-4FB Each Side

NOTE: Relays listed below have four dependent front and back contacts on each side.
Contacts are silver-impregnated carbon to silver front and silver to silver back.
Relays can be furnished with contacts arranged as follows:
1—All front and back contacts open in interlocked position.
2—All front contacts closed in energized and interlocked position.
3—Three or less front or back contacts closed in interlocked position in spaces as specified.
Relays are usually furnished in the following resistances: 2, 4, 11, 16, 50, 100, 136, 150, 200, 250, 300, 400, 450, 500, 670, 750, 1000 or 2000 ohms.
Resistance of relay must be specified in all cases.
If contact combinations other than those shown below are required, contact combination and spaces in which desired must be specified.
This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.
For mounting centers see Plate E2349.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Type K Interlocking Relay Complete, with all contacts on both sides open in interlocked position. Specify resistance of coils and method of mounting.....	
B	Type K Interlocking Relay Complete, with all front contacts on both sides closed in interlocked position. Specify resistance of coils and method of mounting.....	
D	Type K Interlocking Relay Complete, with three or less front contacts, on both sides, closed in the interlocked position. Spaces in which closed contacts are required must be specified. Specify resistance of coils and method of mounting.....	
E	Type K Interlocking Relay Complete, with three or less back contacts, on both sides, closed in the interlocked position. Spaces in which closed contacts are required must be specified. Specify resistance of coils and method of mounting.....	
F	Armature Complete, for interlocking relay with front contacts closed in interlocked and energized positions. Includes (1–32, 1–33, 1–34, 1–35, 1–36, 2–37, 2–70 and 2–71).....	42561–9 Gr. 3

(*Continued on following page*)

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Direct-Current
Interlocking Relay
Size 8

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
F1	same as Fig. F, except for interlocking relay with front and back contacts open in interlocked position. Includes (1–32, 1–33, 1–34, 1–35, 1–36a, 2–37, 2–70, and 2-71)	42561–9 Gr. 4
L	Interlocking Dogs Complete, for relay	53221–4 Gr. 1
1	Coil, for relay, specify resistance	
2	Core, for coils	29514–51
3	Felt Washer, for use under coils	1533–10
4	Screw, $\frac{5}{16}$″-18 x 1½″ hex. hd., with hex. nut, for fastening yokes to cores	2878–1 29954
5	Yoke, for cores	42836–21
6	Spring Washer, for top of coils	36177–2
7	Support, for terminal block	53017–1
8	Terminal Block Complete, includes three terminal posts, bottom nuts and washers	46048–8 Gr. 4
9	Nut, No. 14-24 x ⅛″ hex., for terminal posts, also for screw Fig. 19	46989–2
10	Washer, for terminal posts	1225–2
11	Nut, No. 14-24 x $\frac{5}{16}$″ hex., for terminal posts	42843–1
12	Name Plate, with drive screws, for relay	401–130 54392–1
13	Cover, for relay	29511–41
14	Gasket, rubber, for use between glass case and cover	13014–235
15	Screw, No. 10-32 x ½″ fl. hd., with hex. nut, for fastening interlocking dogs to support Fig. 29	2602–15 577–12
16	Glass Case, for housing relay mechanism	37380–14
17	Insulating Bushing, for screw Fig. 19	35282–4
18	Knurled Nut, No. 14-24 x $\frac{3}{32}$″, for screw Fig. 19	35281–4
19	Screw, No. 14-24 x 3$\frac{7}{16}$″ sq. hd., for fastening glass case to relay cover	48565–26

(Continued on following page)

Type K Direct-Current
Interlocking Relay
Size 8

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
20	Knurled Nut, No. 14-24 rd., with spring, for screw Fig. 19	846–8 786–150
21	Washer, rubber, for use next to glass case, requires washer Fig. 69	1333–12
22	Finger, left hand, for operating interlocking dogs from armature	30136–9
23	Finger, right hand, for operating interlocking dogs from armature	30136–8
24	Nut, No. 10-32 x 5/8″ hex., used as spacer for screw Fig. 27	577–14
25	Lock Washer, for nuts Fig. 26	1601–37
26	Nut, No. 10-32 x 1/8″ hex., for screw Fig. 27, also for screw on insulators Figs. 45, 46, 58 and 59	577–12
27	Screw, No. 10-32 x 2 1/4″ fl. hd., for fastening armature bracket to relay cover	363
28	Screw, No. 10-32 x 1/2″ fil. hd., for fastening cores to cover	0472–1
29	Support, for interlocking dogs	54904
30	Spring, for armature	16111–90
31	Screw, No. 10-32, with hex. nut, for spring Fig. 30	20360–2 577–12
32	Armature Complete, includes brackets for hinging, riveted in place	29524–8 Gr. 4
33	Trunnion, as shown, for armature	35269–4
34	Trunnion, headless, for armature	35269–3
35	Escutcheon Pin, No. 16 x 1/2″, for trunnion	0677–2
36	Bracket, for supporting armature. For relay with front contacts closed in interlocked and energized positions	53016–1
36a	as above, except for relay with front and back contacts open in intermediate position	53016–5
37	Screw, No. 8-32 x 3/8″ hex. hd., with lock washer, for bracket on armature	29525–7 53029–21

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Direct-Current
Interlocking Relay
Size 8

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
38	Screw, No. 10-32 x $\frac{13}{16}$" rd. hd., with hex. nut and lock washer, for fastening terminal block to support	3044–13 577–12 53029–3
39	Terminal Post, No. 14-24 x $2\frac{7}{16}$" sq. hd., for supports Figs. 47, 55, 56 and 57	350–9
40	Terminal Post, No. 14-24, for front contacts	38275–12
41	Terminal Post, No. 14-24 x $1\frac{3}{4}$" sq. hd., for terminal Fig. 53	350–5
42	Insulating Bushing, for terminal posts Figs. 39 and 60	7350–29
43	Lead Washer, for spanner nut Fig. 44	1533–33
44	Spanner Nut, No. 14-24, for terminal posts Figs. 39, 41 and 60	42840–3
45	Insulator Complete, short, for contact fingers	42792–10
46	Insulator Complete, long, for contact fingers	42792–12
47	Back Contact Support Complete, left hand, has silver contact	51320–5 Gr. 2
47a	as above, except right hand	51320–5 Gr. 1
48	Lock Washer, for nut on insulators	53029–3
49	Holder Complete, for front contact, includes screw and hex. nuts	53018 53018–1 367–1 37404–1
50	Lock Washer, for terminal posts Figs. 39 and 41	1225–75
51	Front Contact, silver-impregnated carbon, for relay	13026–26
52	Finger Complete, articulated, having silver front and back contacts. For details and order references see Plate E2345 Fig. A3	
53	Terminal, long,	51559–25
54	Screw, No. 6-32 x $\frac{1}{4}$" fil. hd., with hex. nut, for terminal Fig. 53	3931–6 53029–26 3614–1

(*Continued on following page*)

April 1952 GENERAL RAILWAY SIGNAL COMPANY

Type K Direct-Current
Interlocking Relay
Size 8

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
55	Back Contact Support Complete, has silver contact, for relays with back contacts closed in interlocked and de-energized position.	51320–16 Gr. 2
56	Back Contact Support Complete, has silver contact.	51320–5 Gr. 1
57	Back Contact Support Complete, has silver contact, for relays with back contacts closed in interlocked and de-energized position.	51320–16 Gr. 1
58	Insulator Complete, short, for contact fingers.	42792–15
59	Insulator Complete, long, for contact fingers.	42792–14
60	Post Complete,	49455–8 Gr. 1
61	Screw, No. 6-32 x ¼″ fil. hd., with lock washer, for post Fig. 60.	3931–6 53029–26
62	Finger Complete, articulated, having silver front and back contacts. For details and order references see Plate E2345 Fig. A3.	
63	Dog Complete, left hand, includes trunnion and washers, riveted in place.	53221–3 Gr. 2
64	Dog Complete, right hand, includes trunnion and washers riveted in place.	53221–3 Gr. 1
65	Plate, for interlocking dogs.	54119–3
66	Plate, for supporting dogs.	54119–2
67	Stud, No. 4-36, with hex. nut and lock washer, for dogs.	441–222 12680–10 53029–27
68	Lock Washer, for terminal posts.	53029–22
69	Washer, steel, for nut Fig. 20.	50587–1
72	Fibre Washer, for use between spring washer Fig. 6 and coil.	34017–5
73	Plate, relief gap. Eight required when springs Fig. 30 are *not* used. Six required when springs are used and two plates Fig. 74 are also required.	18052
74	Plate, relief gap. Two required when springs Fig. 30 are used.	18052–1

Memoranda

B. G. Webb.

File in Catalog
Section E, Part 23

CHANGE NOTIFICATION SHEET
SIGNAL FLASHER RELAYS
Flashing Rate Adjustment Eliminated

The Type B1 and the Type K2 signal flasher relays are now factory adjusted for a flashing rate of approximately 60 flashes per minute. The external rate adjustment feature on each of these relays has been eliminated.

The new Type B flasher, 56001-915 Gr. 1, is designed for operation on 9 to 14 volts (5 or 6 lead cells or the equivalent). The relay will not operate properly on other voltages.

The new Type K flashers, 53000-274 Gr. 1 and 53000-274 Gr. 2, are designed for operation on 9 to 12 volts (5 lead cells) and 11 to 14 volts (6 lead cells) respectively. The 53000-274 Gr. 1 relay must not be used with a resistor on 6 lead cells, as the desired flashing rate cannot be obtained.

Type K, Tractive-Armature Direct-Current Flasher Relay

Foreword

The Type K Flasher Relay was designed to control the current to the lamps of flashing light highway crossing signals. In size, shape and general appearance it is similar to the Type K Size 4 Neutral Relay. Its design and construction are unusually simple, its operation is positive and the duration of flashes produced, as well as the time interval between flashes remains uniform and equal regardless of variations in operating voltage. Unless otherwise specified relays are adjusted for 40 to 45 operations per minute at rated relay voltage, that is, for giving 40 to 45 flashes per minute to any lamp circuit that may be controlled through its contacts.

Adjustment of Flasher Relay

An appreciable adjustment of the flashing rate is possible because of the incorporation of a number of copper washers on the center leg of the magnetic circuit.

These copper washers tend to retard the rate at which the electromagnetic flux increases in the outer legs of the magnetic circuit upon which are located the relay coils; therefore, they tend to decrease the rate of oscillation of the armature.

When desirable, one or more of these copper washers may be removed to increase the flashing rate, or one or more may be added to decrease the flashing rate.

These washers may be added or removed very easily without breaking the seal, or disturbing the adjustment of the relay; it being only necessary to remove the bolts securing the yoke pieces to the cores, an operation that may be performed in the field with ordinary tools.

Radio Interference Reduction

When Type K Flasher Relays are used to control the operation of flashing-light type highway crossing signals, radio interference in nearby radio receivers is reduced to a level that is generally below the atmospheric noise level and therefore unnoticeable.

First, the principle of operation of this relay whereby the operating or control contact alternately shunts each of the relay coils produces much less interference than when the contact alternately makes and breaks the circuit to each coil.

Second, a condenser is mounted in back of the relay coils and connected in parallel with one of them. This condenser absorbs the transient phenomena produced by the operation of the control contact as it changes the shunt from one coil to the other.

Third, the front and back type of operated contact allows for signal circuits wherein the lamps are alternately shunted; thus the contacts break less current and produce less interference without additional modes of suppression.

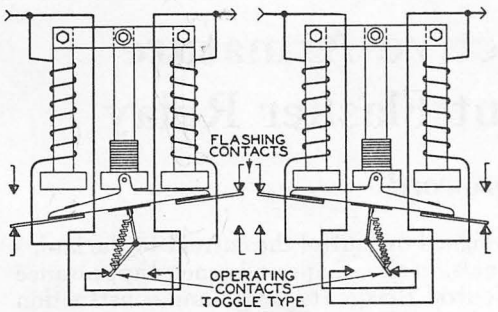


Fig. 1

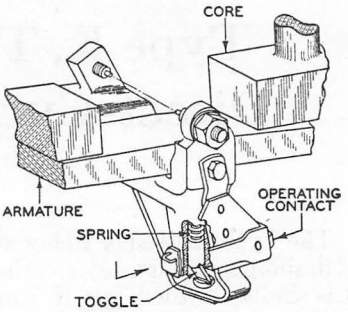


Fig. 2

Fig. 3

Diagrams Figs. 1 and 2, are included for explaining the operation of the relay and Fig. 3 illustrates the operation of the toggle feature.

A neutral core is provided between the two relay cores and the armature is mounted on trunnion bearings placed centrally between the two pole pieces, so that the armature may rock first toward one pole face and then the other, which opens and closes the contacts.

When the relay is de-energized the armature remains in its last energized position as shown by Figs. 1 and 2. When energy is applied, one coil is energized and the armature moves to the opposite side. As it moves to the opposite side the operating contact shunts one coil which causes the other coil to pull the armature over. The toggle is operated just before completion of stroke and the action is reversed as follows:

Toggle contacts now shunt coil which has just ceased operation, resulting in slow release, at the same time energizing the other coil causing operation in the opposite direction as soon as slow release effect has been overcome.

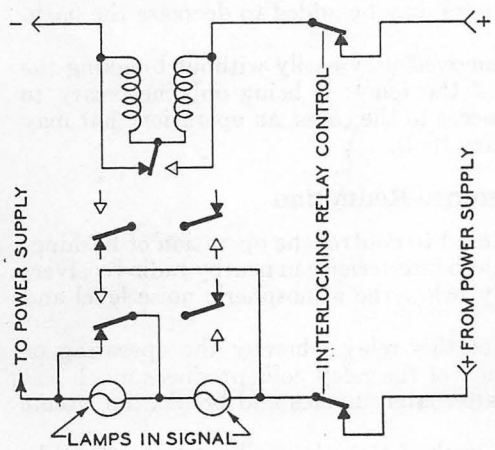


Fig. 4

Since the signal control contacts of the flasher relay are of the conventional front and back type, distinct advantages may be obtained by arranging the circuit so the flasher relay contacts alternately shunt the two signal lamps that are connected in series across the power supply as shown in Fig. 4. It is our recommendation that the relay be arranged in the circuit in accordance with Fig. 4 to obtain longer contact life and better operation performance.

Contacts

This relay is equipped with four dependent front and back, silver-platinum to silver-platinum contacts which may be employed to control four independent flashing signal circuits. In addition to these contacts, a pair of operating contacts is provided for alternately shunting the relay coils.

Electrically Biased Flasher Relay

The electrically biased flasher relay was designed for flashing signal indications where it is necessary for a particular set of its contacts to always remain closed when the relay is not flashing. This relay is similar to our regular flasher relay shown on Plate E2304 with the exception of a terminal block with three long posts and external wiring as shown by Figs. 6 and 7. The wiring is arranged to use a local and a controlled source of energy. The local source is used to return and hold the contacts in the position held before the last flashing operation. The local energy is always connected to the relay and when not flashing the coils are in series so that the energy consumption is low. When the controlled energy is closed the relay starts flashing and operates in exactly the same manner as the regular flasher relay. See Fig. 5 for typical circuit.

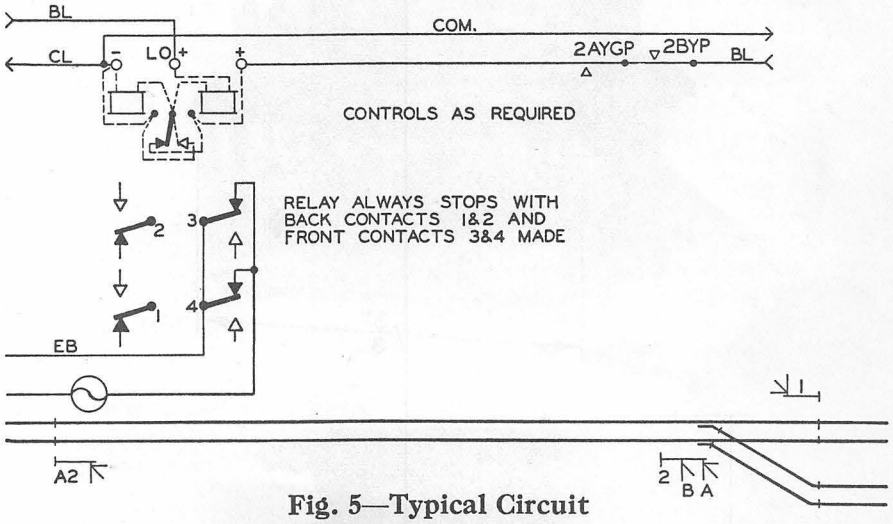


Fig. 5—Typical Circuit

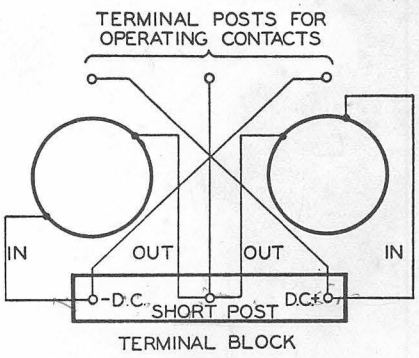


Fig. 6—Standard Flasher Relay

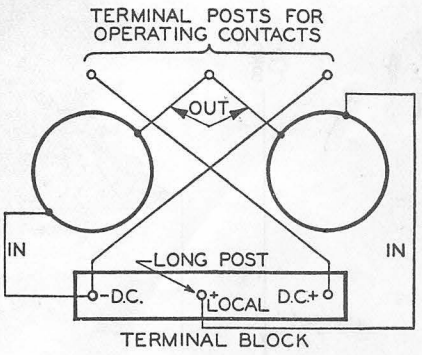
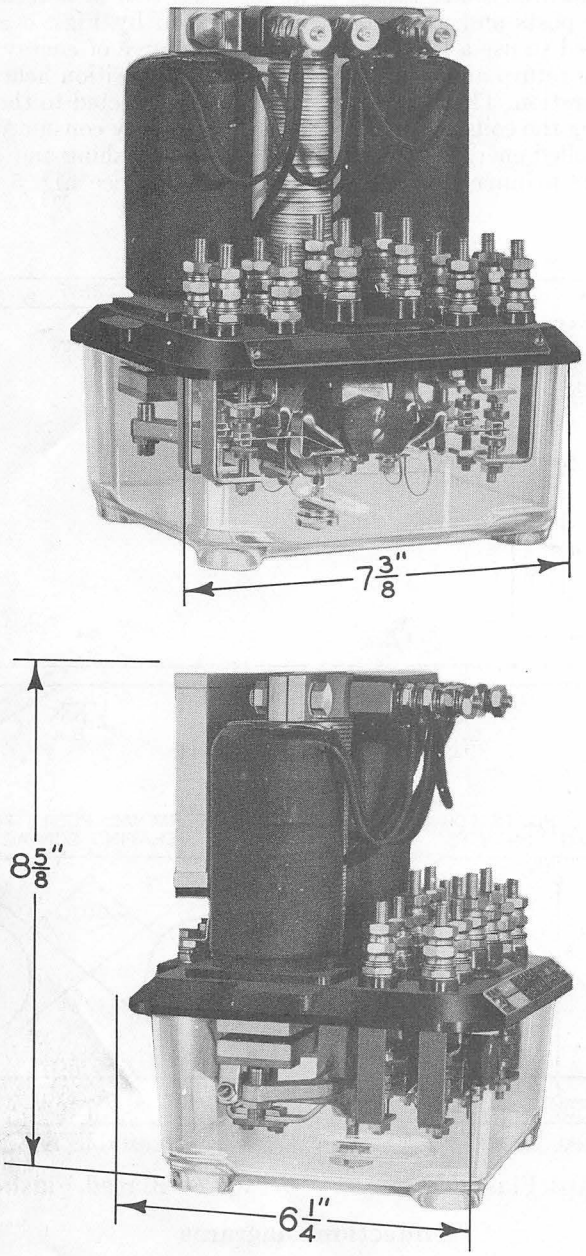


Fig. 7—Biased Flasher Relay

Connection Diagrams



Type K, Direct-Current, Flasher Relay

Type K Direct-Current

Flasher Relay

Toggle Type With Adjustable Armature Stops

4FB

NOTE: Relays listed below have four dependent front and back contacts which may be employed to control four independent flashing signal circuits.

Contacts are silver-platinum to silver-platinum front and back.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21. Mounting brackets Figs. W and Z are recommended where severe vibration may be encountered.

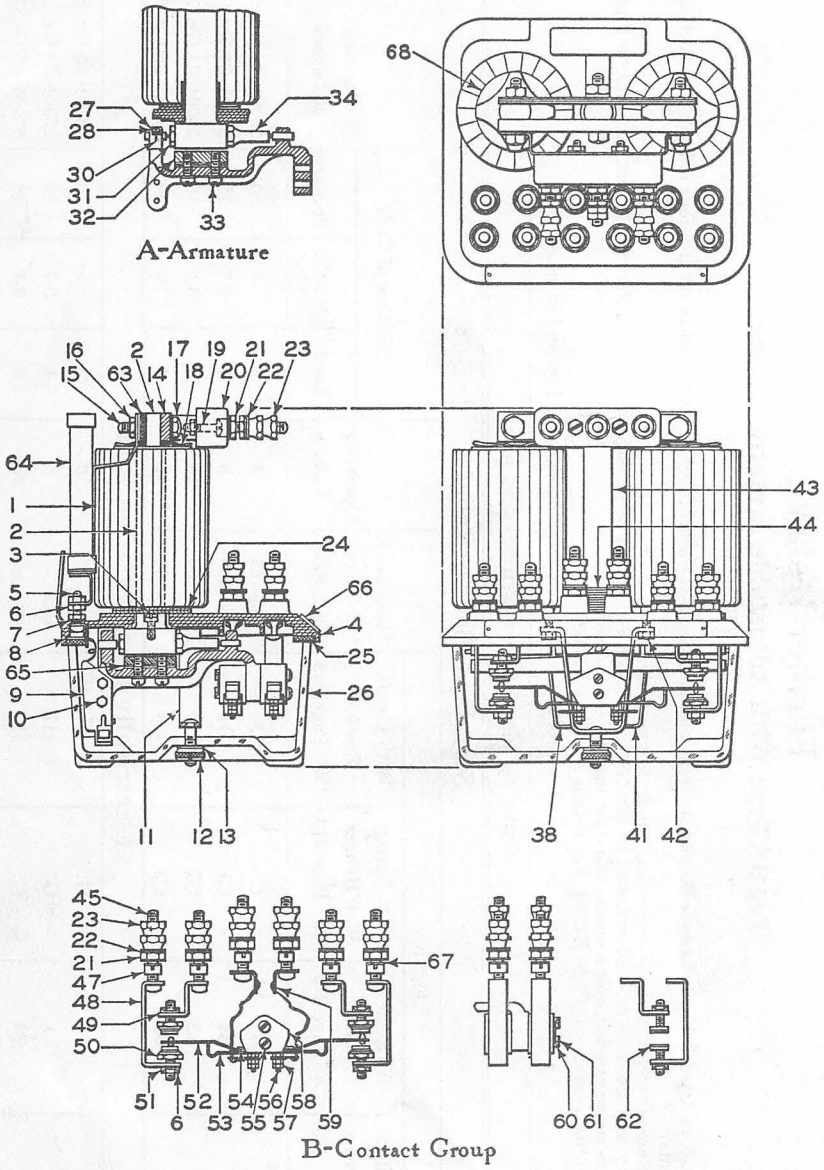
For mounting centers see Plate E2349. For details see Plate E2309.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Standard Flasher Relay

Fig. No.				Resistance in Ohms Each Side	Operating Volts	Number of Cells			Drawing Reference
With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Spring Wall Hanger "X" Page 213	With Comb. Bracket "W" Page 213			Lead	NI-FE	Primary	
A	B	C	D	185-185	6	3	5	10	53004–34 Gr. 5
A1	B1	C1	D1	260-260	8	4	6-7	13	53004–34 Gr. 6
A2	B2	C2	D2	400-400	10	5	8-9	16	53004–34 Gr. 7
A3	B3	C3	D3	500-500	12	6	10	20	53004–34 Gr. 8
Electrically Biased Flasher Relay									
E	F	G	H	185-185	6	3	5	10	53004–35 Gr. 5
E1	F1	G1	H1	260-260	8	4	6-7	13	53004–35 Gr. 6
E2	F2	G2	H2	400-400	10	5	8-9	16	53004–35 Gr. 7
E3	F3	G3	H3	500-500	12	6	10	20	53004–35 Gr. 8



Type K, Direct-Current, Flasher Relay
For Repair Parts Only

Type K Direct-Current

Flasher Relay

Note: This plate is included for ordering repair parts for older style relays only.
For details on latest type relays see Plate E2309.
For mounting brackets see Plate E2349.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Armature Complete, for relay, includes (1–27, 1–28, 1–30, 1–31, 1–32, 2–33 and 1–34)	
B	Contact Group Complete, as shown, has silver-impregnated carbon to silver front and silver to silver back contacts. Includes all parts for adding or replacing contact group	53010–82 Gr. 2
B1	as above, except has silver to silver contacts	53010–82 Gr. 1
1	Coil, for relay, specify resistance	
2	Core, for coils, includes rivet and pin	29514–58 43434–22 20592–1
3	Screw, No. 10-32 x 1/2″ fil. hd., for fastening cores to relay cover	0472–1
4	Cover, for relay	29511–45
5	Screw, No. 10-32 x 7/8″ sq. hd., used as terminal post for finger Fig. 9	29151–8
6	Nut, No. 10-32 x 1/8″ hex., for terminal post Fig. 5 and relay contacts	577–12
7	Washer, for terminal post	5046–5
8	Strip, for use between gasket and cover	17378–12
9	Operating Contact Finger, for coils	53011–18 Gr. 1
10	Screw, No. 8-32 x 5/16″ hex. hd., with washers, for fastening operating contact to armature bearing	29525–9 53029–4 2534–1
11	Support Complete, as shown, for supporting glass case	54302 Gr. 1
12	Knurled Nut, No. 14-24, with spring, for support Fig. 11	846–8 786–150
13	Washer, rubber, for use between nut Fig. 12 and glass case	1333–12
14	Yoke, for cores	42836–18
15	Screw, 5/16″-18 x 1 3/8″ hex. hd., for fastening yokes to cores	3440–4
16	Nut, 5/16″-18 x 7/32″ hex., for screw Fig. 15	29954
17	Support, for terminal block	53017–5

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Direct-Current
Flasher Relay

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
18	Spring Washer, for top of coils	36177–2
19	Screw, No. 10-32 x 13/16″ rd. hd., with hex. nut and washer, for fastening terminal block to support Fig. 17	3044–13 577–12 53029–7
20	Terminal Block, includes terminal posts	46048–8 Gr. 4
21	Nut, No. 14-24 x 1/8″ hex., for terminal post	46989–2
22	Washer, for terminal post	1225–2
23	Nut, No. 14-24 x 5/16″ hex., for terminal post	42843–1
24	Washer, felt, for use under coils	1533–10
25	Gasket, rubber, for use between glass case and relay cover	13014–248
26	Glass Case, for housing relay mechanism	37380–1
27	Bearing, for armature	53025–3
28	Screw, No. 8-32 x 3/8″ fil. hd., for clamping armature bearing to trunnions	55160–9 53029–4
30	Escutcheon Pin, No. 16 x 1/2″, for securing bracket on armature to hinge pin	0677–2
31	Nut, No. 14-40 x 1/8″ hex., for shaft on armature	12578–4
32	Armature, for relay, includes rivets	29523–30 43484
33	Screw, No. 10-32 x 1/2″ fil. hd., with lock washer, for fastening armature to bearing	0472–1 0622
34	Shaft Complete, with trunnions and nut, for armature NOTE: The hole in core Fig. 43 must be enlarged for this new shaft.	57037–3 Gr. 1
38	Finger Complete, as shown, for use with operating contact finger Fig. 9	53011–17 Gr. 1
41	Finger Complete, as shown, for use with operating contact finger Fig. 9	53011–16 Gr. 1
42	Screw, No. 10-32 x 1/2″ hex. hd., with nut and lock washer, for fastening support Fig. 11 to relay cover	13006–11 577–12 53029–7
43	Core, as shown, common to both magnetic circuits in relay	29514–36

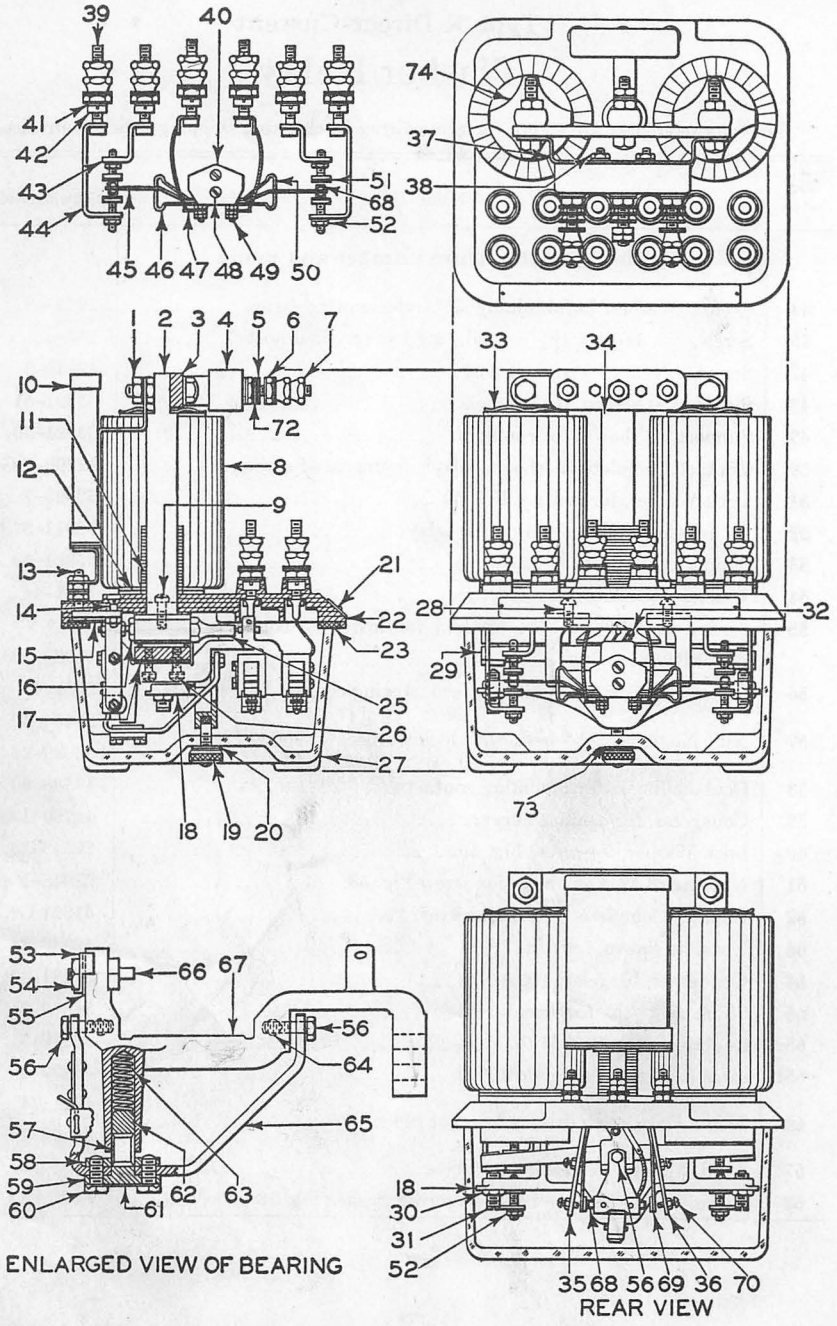
(Continued on following page)

Type K Direct-Current
Flasher Relay

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
44	Copper Washer, for obtaining slow release of armature	1225–48
45	Screw, No. 14-24 x 1¾″ sq. hd., used as terminal post	350–5
47	Spanner Nut, for terminal post	42840–3
48	Support, as shown, for contacts	35921–51
49	Support, as shown, for contacts	35921–50
50	Contact Complete, as shown, silver-impregnated carbon	42799–7 Gr. 8
51	Lock Washer, for contact Fig. 50	53029–7
52	Finger Complete, as shown, for relay	53011–37 Gr. 1
53	Support, for contact finger	35921–49
54	Washer, for contact finger	1601–44
55	Screw, No. 8-32 x 1⅝″ fil. hd., for fastening contact block to armature bearing	28989–16
56	Screw, No. 6-32 x ¾″ fil. hd., for fastening contact fingers to block	3931–4
57	Nut, No. 6-32 x $\frac{3}{32}$″ hex., with lock washer, for screw Fig. 56	37404–1 53029–26
58	Contact Block, for mounting contacts	47508–60
59	Connector, for contact finger	42760–1 Gr. 15
60	Lock Washer, for screw Fig. 55	22543–15
61	Nut, No. 8-32 x ⅛″ hex., for screw Fig. 55	28948–1
62	Contact Complete, as shown, silver	51321 Gr. 8
63	Yoke, as shown, for relay	42836–24
64	Condenser, for relay	52281–42
65	Shim, .002″ th., for armature	53879–2
65a	as above, except .005″ th	53879–3
65b	same as Fig. 65, except .010″ th	53879–4
66	Name Plate, with drive screws for relay	401–174 54392–1
67	Lead Washer, for terminal posts	1533–33
68	Fibre Washer, for use between spring washer Fig. 18 and coil	34017–5

PLATE E2309



Type K, Direct-Current, Flasher Relay

April 1952 GENERAL RAILWAY SIGNAL COMPANY

Type K Direct-Current

Flasher Relay

Toggle Type with Adjustable Armature Stops

For mounting brackets see Plate E2349.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
1	Screw, $\frac{5}{16}$″-18 x 1½″ hex. hd., with hex. nut and washer, for fastening yokes to cores	2878–1 29954 1225–21
2	Core, for relay	29514–51
3	Yoke, for cores	42836–18
4	Terminal Block Complete, with two long and one short terminal posts	46048–8 Gr. 4
4a	as above, except with three long terminal posts	46048–10 Gr. 4
5	Washer, for terminal posts	1225–2
6	Nut, No. 14-24 x ⅛″ hex., for terminal posts	46989–2
7	Nut, No. 14-24 x $\frac{5}{16}$″ hex., for terminal posts	42843–1
8	Coil, for relay, specify resistance H10	
9	Screw, No. 10-32 x ½″ fil. hd., for fastening cores to cover	0472–1
10	Condenser, for relay	52281–42
11	Copper Washer, for relay	1225–48
12	Felt Washer, for use between coils and cover	1533–10
13	Terminal Post, No. 10-32 x ⅞″ sq. hd., with hex. nuts and washers, for relay	29151–19 577–12 5046–5
14	Screw, No. 10-32 x ⅝″ fl. hd., with hex. nut and lock washer, for fastening supports Figs. 35 and 36 to relay cover	2602–27 577–12 53029–3
15	Strip, for relay	17378–14
16	Nut, No. $\frac{5}{16}$″-40 x ⅛″ hex., for shaft Fig. 25	12578–4
17	Shim, .002″ th., for armature, two required	53879–2
17a	as above, except .005″ th., one required	53879–3
17b	same as Fig. 17, except .010″ th., one required	53879–4
18	Support Complete, used as stop for armature, includes stud for holding glass case to cover	54302–3 Gr. 1

(*Continued on following page*)

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Direct-Current

Flasher Relay

Toggle Type with Adjustable Armature Stops

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
19	Knurled Nut, No. 14-24 rd., with spring, for screw on armature support Fig. 18	846–8 786–150
20	Washer, rubber, for use next to glass case, requires washer Fig. 73	1333–12
21	Name Plate, with drive screws, for relay	401–176 54392–1
22	Cover, only, for relay	29511–56
23	Gasket, rubber, for use between glass case and cover	13014–248
25	Shaft Complete, for bearing, includes trunnions and nut	57037–3 Gr. 1
26	Screw, No. 10-32 x ½″ fil. hd., with lock washer, for fastening armature to bearing	12280–9 34494
27	Glass Case, for housing relay contacts	37380–1
28	Screw, No. 10-32 x $\frac{7}{16}$″ rd. hd., with lock washer, for fastening support Fig. 18 to cover	3044–38 53029–3
29	Armature Complete, includes insulations and residuals riveted in place	29524–21 Gr. 1
30	Nut, $\frac{5}{16}$″-40 x ⅜″ hex., for screw Fig. 31	12578–5
31	Screw, $\frac{5}{16}$″-40, stop for armature	3018–21
32	Screw, No. 8-32 x ½″ fil. hd., with lock washer, for fastening bearing Fig. 67 to trunnions	55160–13 53029–21
33	Spring Washer, for top of coils	36177–2
34	Core, for relay	29514–62
35	Support Complete, left hand, includes contacts and stop screws Fig. 70	54302–2 Gr. 4
36	Support Complete, right hand, includes contacts and stop screws Fig. 70	54302–2 Gr. 3
37	Support, for terminal block	53017–5
38	Screw, No. 10-32 x $\frac{13}{16}$″ rd. hd., with hex. nut and lock washer, for fastening terminal block to support	3044–13 577–12 53029–3

(Continued on following page)

Type K Direct-Current

Flasher Relay

Toggle Type with Adjustable Armature Stops

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
39	Terminal Post, No. 14-24 x 1¾″ sq. hd., for relay	350–5
40	Contact Block, for contact fingers	47508–60
41	Lead Washer, for terminal posts	1533–33
42	Spanner Nut, No. 14-24, for terminal posts	42840–3
43	Support, as shown, for contact Fig. 51	35921–50
44	Support, as shown, for contact Fig. 51	35921–51
45	Finger Complete, as shown, for relay, includes silver contact	53011–37 Gr. 1
46	Support, for contact fingers	35921–104
47	Connector Complete, for contacts	42760–1 Gr. 15
48	Screw, No. 8-32 x 1¾″ fil. hd., with hex. nut and lock washer, for fastening block Fig. 40 to bearing Fig. 67	28989–16 28948–1 22543–15
49	Screw, No. 6-32 x ¾″ fil. hd., with hex. nuts and washers, for fastening fingers and supports to block Fig. 40	367–1 2534–1 37404–1 53029–26
50	Support, for contact fingers	35921–101
51	Contact Complete, for relay	51321 Gr. 8
52	Nut, No. 10-32 x ⅛″ hex., with lock washer, for fastening contacts to supports	577–12 53029–3
53	Lock Washer, for nut Fig. 54	1601–28
54	Nut, No. 10-48 x ⅛″ hex., for trunnion Fig. 66	51029–2
55	Washer, for nut Fig. 54	35448
56	Screw, No. 5-40 x ½″ hex. hd., for hinging support Fig. 65	55605
57	Toggle, as shown, for relay	55630
58	Block, for toggle	55572
59	Plate, for toggle	55632
60	Screw, No. 8-32 x 5/16″ hex. hd., for fastening plate Fig. 59 to block Fig. 58	359–1

(*Continued on following page*)

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Direct-Current

Flasher Relay

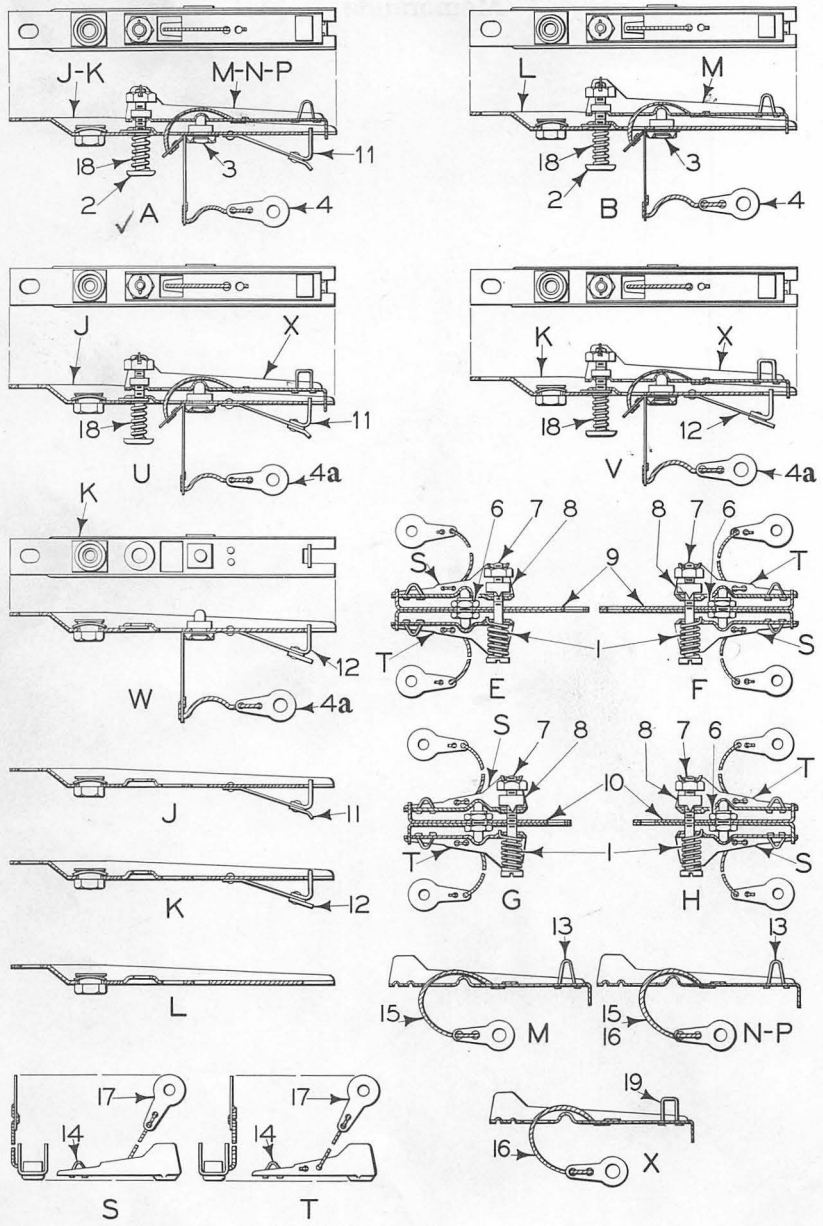
Toggle Type with Adjustable Armature Stops

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
61	Lock Washer, for screws Fig. 60	22543–9
62	Plunger, for toggle	55631
63	Spring, for plunger	586–83
64	Set Screw, No. 10-32, for locking screw Fig. 56	412–7
65	Support Complete, includes contacts riveted in place	54302–1 Gr. 2
66	Trunnion, for bracket	35269–12
67	Bearing, only, as shown	53025–1
68	Contact, only, silver, for support Fig. 65, and finger Fig. 45	48141–63
69	Contact Complete, silver, for supports Figs. 35 and 36	13061–33 Gr. 2
70	Screw, No. 5-40 x 3/8″ rd. hd., with hex. nut, for supports Figs. 35 and 36	55670 54560
72	Lock Washer, for terminal posts	53029–22
73	Washer, steel, for nut Fig. 19	50587–1
74	Fibre Washer, for use between spring washer Fig. 33 and coil	34017–5

Memoranda

PLATE E2345



Neutral and Polarized Fingers for Type K Relays

Type K Relays

Neutral and Polarized Fingers

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Finger Complete, articulated, has regular silver front and back contacts, for use on the following relays: 1—All Neutral, with regular-duty contacts. 2—All Polarized and Retained-Neutral Polarized Relays.	53011–41 Gr. 1
	Note: For fingers for interlocking relays, see Fig. A3 below.	
A1	as above, except for use as "make-before-break contact" on Primary-Secondary Relay Combination and Overload Relay	53011–42 Gr. 8
A2	same as Fig. A, except for Size 2 Power-Transfer Relay	53011–42 Gr. 9
A3	same as Fig. A, except for interlocking relay. **Order must specify drawing number of relay and space number in which finger is to be used.**	
B	Finger Complete, articulated, has regular silver front contact only, for use on relays having front contacts only	53011–12 Gr. 2
E	Polarized Finger Complete, articulated, left hand, has silver contacts, for all Size 6 Polarized and Retained-Neutral Polarized Relays	53011–22 Gr. 3
F	Polarized Finger Complete, articulated, right hand, has silver contacts, for all Size 6 Polarized and Retained-Neutral Polarized Relays	53011–22 Gr. 4
G	Polarized Finger Complete, articulated, left hand, has silver contacts, for all Size 8 Polarized and Retained-Neutral Polarized Relays	53011–22 Gr. 1
H	Polarized Finger Complete, articulated, right hand, has silver contacts, for all Size 8 Polarized and Retained-Neutral Polarized Relays	53011–22 Gr. 2
J	Finger, lower, with regular-back contact, includes all parts as shown.	53011–43 Gr. 1
K	Finger, lower, with heavy-duty back contact, includes all parts as shown	53011–43 Gr. 3
L	Finger, lower, includes all parts as shown	53011–43 Gr. 2
M	Finger Complete, upper, includes all parts as shown, for fingers Figs. A and B	53013–6 Gr. 1 15250–4

(*Continued on following page*)

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Relays

Neutral and Polarized Fingers

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
N	Finger Complete, upper, includes all parts as shown, for finger Fig. A1	53013–6 Gr. 2 15250–4
P	Finger Complete, upper, includes all parts as shown, for finger Fig. A2	53013–6 Gr. 3 15250–4
S	Finger Complete, includes all parts as shown, for polarized fingers Figs. E, F, G and H	53013–4 Gr. 2
T	Finger Complete, includes all parts as shown, for polarized fingers Figs. E, F, G and H	53013–4 Gr. 1
U	Finger Complete, articulated, has heavy-duty front and regular-back contacts	53011–41 Gr. 6
V	Finger Complete, articulated, has heavy-duty front and back contacts	53011–41 Gr. 10
W	Finger Complete, has heavy-duty back contact only	53011–41 Gr. 15
X	Finger Complete, upper, includes all parts as shown, for fingers Figs. U and V	53013–6 Gr. 4 15250–4
1	Spring, for fingers Figs. E, F, G and H	586–22
2	Screw, 1/8″-56, with hex. nut, square nut, and pin, for springs Fig. 18 on neutral fingers	53019 15250–4 12680–6 504–73
3	Pivot Screw, No. 10-32, with sq. nut, for fingers	4811–15 29536–1
4	Connector Complete, 3¼″ long, for all regular-duty fingers except those used in spaces 1 and 8 of interlocking relays	42760–23 Gr. 1
4a	as above, except for heavy-duty fingers	42760–23 Gr. 6
4b	same as Fig. 4, except 2⅝″ long, for regular-duty fingers in spaces 1 and 8 of interlocking relays	42760–23 Gr. 7
4c	same as Fig. 4b, except for heavy-duty fingers	42760–23 Gr. 8
6	Pivot Screw, No. 10-32, with hex. nut, for polarized fingers Figs. E, F, G and H	4811–24 47344–1

(*Continued on following page*)

Type K Relays

Neutral and Polarized Fingers

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
7	Screw, 1/8″-56, with hex. nut and pin, for spring on polarized fingers.	53019–5 12680–6 504–73
8	Nut, 1/8″-56 sq. special, for screw Fig. 7	55742
9	Finger, includes upper and lower parts welded together, for polarized fingers Figs. E and F	49664–24
10	Finger, includes upper and lower parts welded together, for polarized fingers Figs. G and H	49664–23
11	Back Contact Complete, silver, with spring and stop, for finger Fig. J	13061–76 Gr. 1
12	Back Contact Complete, silver, with spring and stop, for finger Fig. K	13061–76 Gr. 3
13	Contact, only, silver, for fingers Figs. M, N and P	48141–10
14	Contact, only, silver, for fingers Figs. S and T	48141–29
15	Connector Complete, for regular-duty contacts	42760–12 Gr. 13
16	Connector Complete, for heavy-duty fingers	42760–12 Gr. 14
17	Connector Complete, for polarized fingers Figs. S and T	42760–12 Gr. 9
18	Spring, .032″ dia., wire	58652 Gr. 2
18a	as above, except .025″ dia. wire	58652 Gr. 1
19	Contact, only, heavy-duty	48141–79

GENERAL RAILWAY SIGNAL COMPANY April 1952

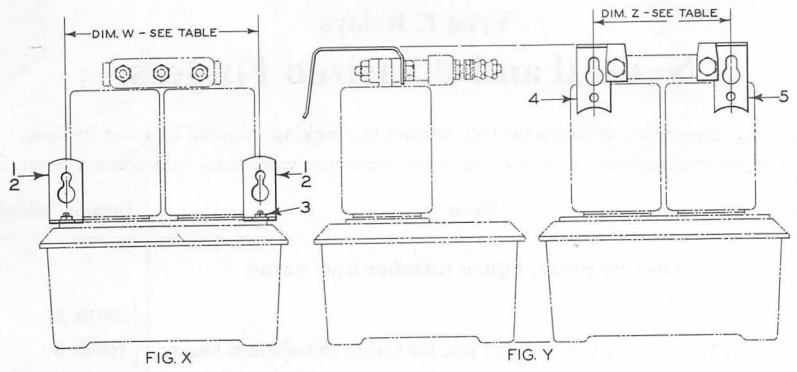
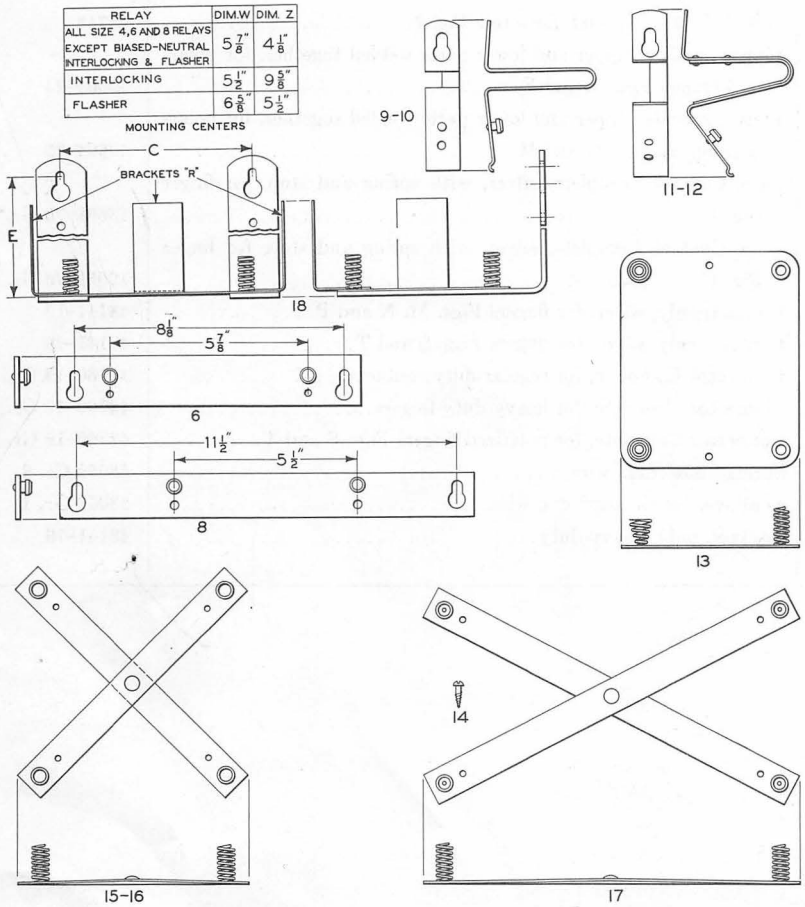


FIG. X FIG. Y

RELAY	DIM. W	DIM. Z
ALL SIZE 4,6 AND 8 RELAYS EXCEPT BIASED-NEUTRAL INTERLOCKING & FLASHER	5 7/8"	4 1/8"
INTERLOCKING	5 1/2"	9 5/8"
FLASHER	6 5/8"	5 1/2"

MOUNTING CENTERS



Wall Hangers and Shock Absorbers for Type K Relays

April 1952 GENERAL RAILWAY SIGNAL COMPANY

Type K Relays

Wall Hangers and Shock Absorbers

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
1	Wall Hanger, spring type, for mounting Size 4 Neutral, Flasher and Interlocking Relays, (cannot be used on biased-neutral)	42827–3
2	Wall Hanger, spring type, for mounting Size 6 and 8 Neutral, Polarized and Retained-Neutral Polarized Relays, (cannot be used on biased-neutral)	42827–9
3	Screw, No. 10-32 x ¾″ fl. hd., with hex. nut and lock washer, for fastening wall hangers to relay cover of Sizes 4 and 6 Neutral Relays	6727–29 577–12 53029–3
3a	as above, except 1⅜″ lg., for fastening wall hanger to relay cover of Size 8 Neutral Relay and Size 8 Polarized and Retained-Neutral Polarized Relays	363–2 577–12 53029–3
3b	same as Fig. 3, except 1¼″ lg., for fastening wall hanger to relay cover of Size 6 Polarized and Retained-Neutral Polarized Relays	6727–18 577–12 53029–3
3c	same as Fig. 3, except ½″ lg., fil. hd., for fastening wall hanger to relay cover of Interlocking Relay	12280–37 577–12 53029–3
3d	same as Fig. 3, except 7/16″ lg., rd. hd., for fastening wall hanger to relay cover of Flasher Relay	3044–38 577–12 53029–3
4	Wall Hanger, left hand, resilient type, for mounting all relays except biased-neutral	42827–19
5	Wall Hanger, right hand, resilient type, for mounting all relays except biased-neutral	42827–18
6	Bracket Complete, for use with springs Figs. 11 and 12, for wall mounting Sizes 6 and 8 Retained-Neutral Polarized Relays	42819–2 Gr. 1
8	Bracket Complete, for use with springs Figs. 11 and 12, for wall mounting interlocking relay	42819–2 Gr. 3
9	Spring Complete, left hand, shock absorber, for wall mounting all Size 4 and 6 regular releasing relays, except biased-neutral, plug-coupled, magnetic-stick, flasher, and retained-neutral	40453–7 Gr. 1

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Relays

Wall Hangers and Shock Absorbers

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
10	Spring Complete, right hand, shock absorber, for wall mounting all Size 4 and 6 regular releasing relays, except biased-neutral, plug-coupled, magnetic-stick, flasher and retained-neutral	40453–7 Gr. 2
11	Spring Complete, left hand, shock absorber, for wall mounting all Size 4, 6 and 8 slow release and slow pickup relays, except biased-neutral, plug-coupled, magnetic-stick, flasher and retained-neutral	40453–8 Gr. 1
12	Spring Complete, right hand, shock absorber, for wall mounting all Size 4, 6 and 8 slow release and slow pickup relays, except biased-neutral, plug-coupled, magnetic-stick, flasher and retained-neutral	40453–8 Gr. 2
13	Plate Complete, for Size 4 and Flasher Relays. Shock absorber for use when relay is shelf mounted	53008 Gr. 3
14	Wood Screw, No. 8 x 5/8″ rd. hd., for fastening plates Figs. 13, 15, 16 and 17 to shelf	0197–4
15	Plate Complete, for Size 6 Relays. Shock absorber for use when relay is shelf mounted	53008–4 Gr. 1
16	Plate Complete, for Size 8 Relays. Shock absorber for use when relay is shelf mounted	53008–1 Gr. 1
17	Plate Complete, for Interlocking Relay. Shock absorber for use when relay is shelf mounted	53008–5 Gr. 1
18	Bracket Complete, for wall or shelf mounting all Size 4 relays. Dim. "C" = 5 7/8″, Dim. "E" = 5 1/2″	42819–5 Gr. 6
18a	as above, except without brackets Fig. R	42819–5 Gr. 1
18b	same as Fig. 18, except for all Size 6 relays. Dim. "C" = 5 7/8″, Dim. "E" = 6 1/4″	42819–5 Gr. 7
18c	same as Fig. 18b, except without brackets Fig. R	42819–5 Gr. 2
18d	same as Fig. 18, except for all Size 8 relays. Dim. "C" = 5 7/8″, Dim. "E" = 6 1/4″	42819–5 Gr. 8
18e	same as Fig. 18d, except without brackets Fig. R	42819–5 Gr. 3

(*Continued on following page*)

April 1952 GENERAL RAILWAY SIGNAL COMPANY

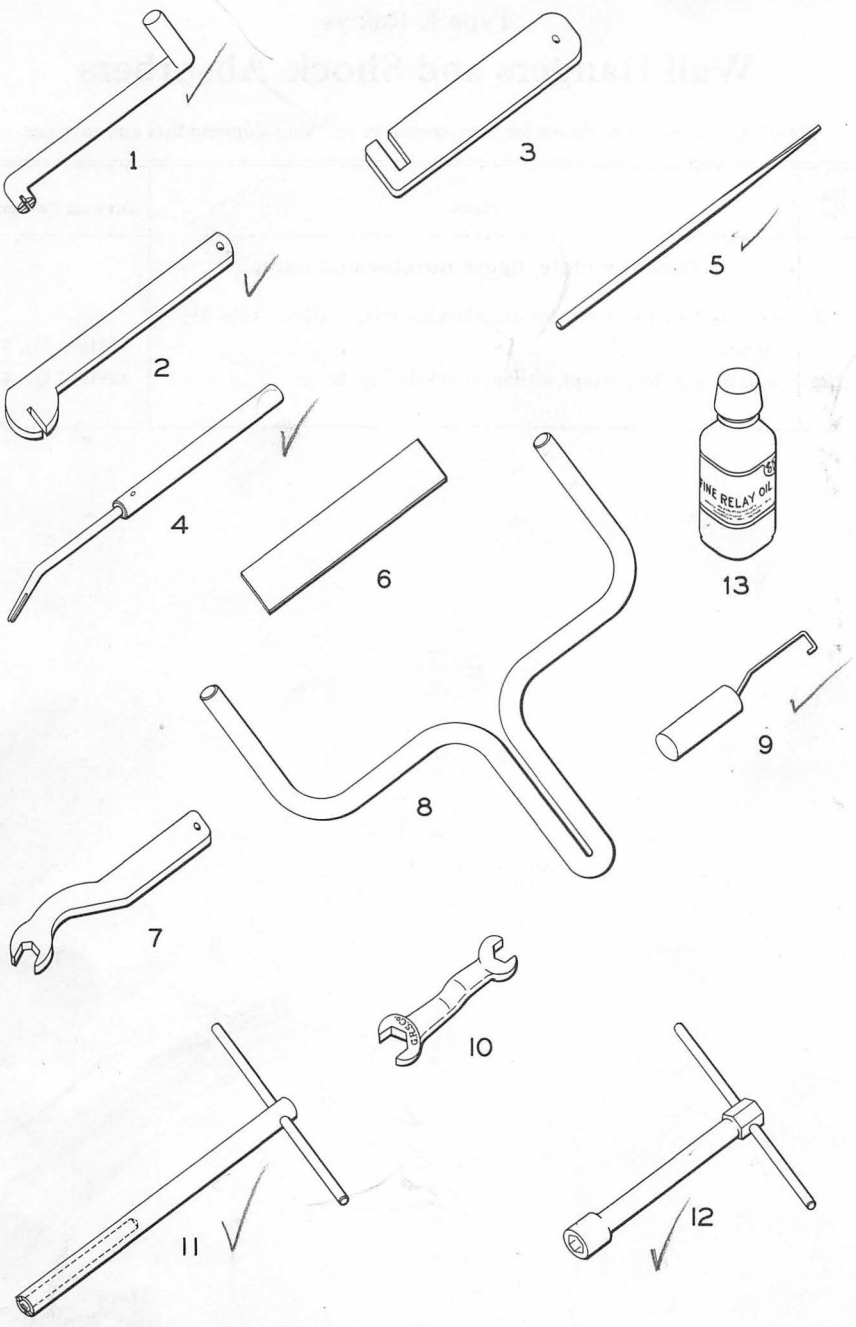
Type K Relays

Wall Hangers and Shock Absorbers

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
18f	same as Fig. 18 except for Interlocking relays. Dim. "C" = 5½", Dim. "E" = 6¼"	42819–5 Gr. 9
18g	same as Fig. 18f, except without brackets Fig. R	42819–5 Gr. 4

PLATE E2351



Tools
for Type K Relays

April 1952 GENERAL RAILWAY SIGNAL COMPANY

Tools

For Type K Relays

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Tool Kit Complete, includes one each Fig. 1 to 12a, except Fig. 8...	7000–7 Gr. 1
1	Tool, for back contact alignment.....	47951–17
2	Tool, for bending contacts.....	47951–18
3	Tool, for bending contacts.....	47951–19
4	Tool, for adjusting contact fingers.....	47951–20 Gr. 1
5	Tool, for checking alignment of contacts.....	47951–21
6	Burnishing Tool, for cleaning contacts.....	55411–3
7	End Wrench, for $\frac{11}{32}$″ hex. nuts.....	43576–11
8	Tool, for removing top half of plug coupler.....	56052–1
9	Test Weight, 1.0 ounce, for testing contact pressure.....	56807 Gr. 1
9a	as above, except 1.25 ounces.....	56807 Gr. 2
9b	same as Fig. 9, except 1.5 ounces.....	56807 Gr. 3
9c	same as Fig. 9, except 1.75 ounces.....	56807 Gr. 4
9d	same as Fig. 9, except 2.0 ounces.....	56807 Gr. 5
10	End Wrench, for $\frac{3}{8}$″ and $\frac{1}{2}$″ hex. nuts.....	43576–1
11	Wrench, for locking spanner nuts on binding posts.....	41897–3
12	Socket Wrench, for $\frac{11}{32}$″ hex. nuts.....	15197–26
12a	as above, except for $\frac{3}{8}$″ hex. nuts.....	15197–27
13	Fine Relay Oil, $\frac{1}{2}$ oz. bottle, M. S. 2–186.....	51347–10 Gr. 1

Memoranda

Section E, Part 22

Type K Tractive-Armature Direct-Current Polarized and Retained-Neutral Polarized Relays

Supersedes Section E, Part 22, dated July 1949

General Railway Signal Company
Printed in U. S. A.

Memoranda

Type K, Tractive-Armature Direct-Current Polarized Relays

Foreword

The Type K Polarized Relays follow the Type K Neutral Relays in general characteristics. The same type of articulated fingers are employed on both the neutral and polarized contacts. The polarized movement is of an entirely new design giving features never before available in polarized relays for track and line uses.

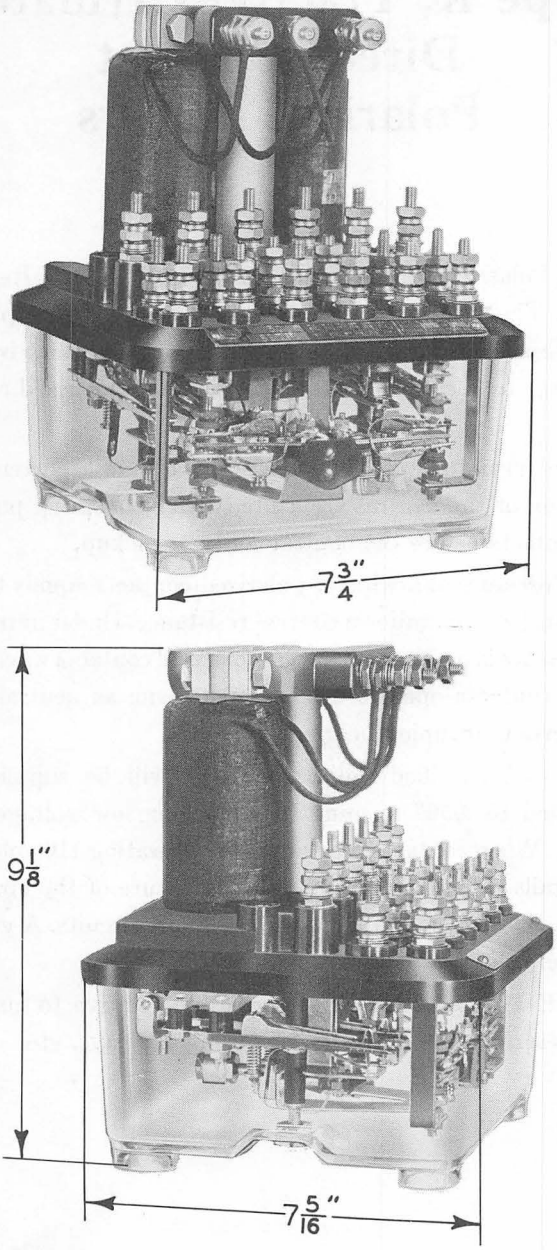
The polarized armature will operate positively at a current value much below the pickup of the neutral armature, thereby insuring positive reversal of polarized contacts before the neutral contacts pickup.

The contact pressure and wipe of polarized contacts equals that of neutral contacts insuring low and uniform contact resistance. Under normal conditions, full contact pressure is maintained on the polarized contacts when de-energized. The polarized contacts operate in the same plane as neutral contacts and there are no vertical trunnion bearings.

Unless otherwise specified polarized relays will be supplied with their contacts adjusted to .050″ opening for operating low voltage circuits, (1st range voltages). When contacts are desired for operating 110 volt circuits, (2nd range), full details should be given as to the nature of the circuit. Contacts are adjusted to .090″ opening for average 110 volt circuits. A greater opening is provided where the load is highly inductive.

See Section E Part 21 for other information relative to current carrying capacity and description of contacts, mounting of relays, etc.

PLATE E2201



Type K, Direct-Current, Polarized Relay
Size Six

Type K Direct-Current

Regular Releasing Polarized Track Relay

Size 6-4FB and 2NR

NOTE: This relay is always furnished with four dependent front and back neutral contacts and two dependent normal and reverse polarized contacts.

Neutral contacts are silver-impregnated carbon to silver front and silver to silver back.

Polarized contacts are silver-impregnated carbon to silver.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.

For mounting centers see Plate E2349.

For details see Plate E2203.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.				Res. of Relay Ohms	Drawing Reference
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213		
A	C	D	H	No Coils	53002-123 Gr. 1
A1	C1	D1	H1	2	53002-123 Gr. 2
A2	C2	D2	H2	4	53002-123 Gr. 3
A3	C3	D3	H3	7	53002-123 Gr. 4
A4	C4	D4	H4	11	53002-123 Gr. 5

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Direct-Current

Slow Releasing Polarized Line Relay

Size 6-4FB and 2NR

NOTE: This relay is always furnished with four dependent front and back neutral contacts and two dependent normal and reverse polarized contacts.

Neutral contacts are silver-impregnated carbon to silver front and silver to silver back. Polarized contacts are silver-impregnated carbon to silver.

If relays with longer releasing time are desired, customer should so specify giving full particulars.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.

For mounting centers see Plate E2349.

For details see Plate E2203.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.						
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213	Res. of Relay Ohms	Minimum Time of Release Seconds at—Amps.	Drawing Reference
E	**F**	**G**	**J**	50	.5 at .043	53002–123 Gr. 40
E1	**F1**	**G1**	**J1**	100	.5 at .041	53002–123 Gr. 41
E2	**F2**	**G2**	**J2**	290	.5 at .019	53002–123 Gr. 42
E3	**F3**	**G3**	**J3**	400	.5 at .017	53002–123 Gr. 43
E4	**F4**	**G4**	**J4**	500	.5 at .016	53002–123 Gr. 44
E5	**F5**	**G5**	**J5**	600	.5 at .015	53002–123 Gr. 45
E6	**F6**	**G6**	**J6**	900	.5 at .012	53002–123 Gr. 46
E7	**F7**	**G7**	**J7**	150	.5 at .030	53002–123 Gr. 47

April 1952 GENERAL RAILWAY SIGNAL COMPANY

Type K Direct-Current

Regular Releasing Polarized Line Relay

Size 6-4FB and 2NR

NOTE: This relay is always furnished with four dependent front and back neutral contacts and two dependent normal and reverse polarized contacts.

Neutral contacts are silver-impregnated carbon to silver front and silver to silver back.

Polarized contacts are silver-impregnated carbon to silver.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.

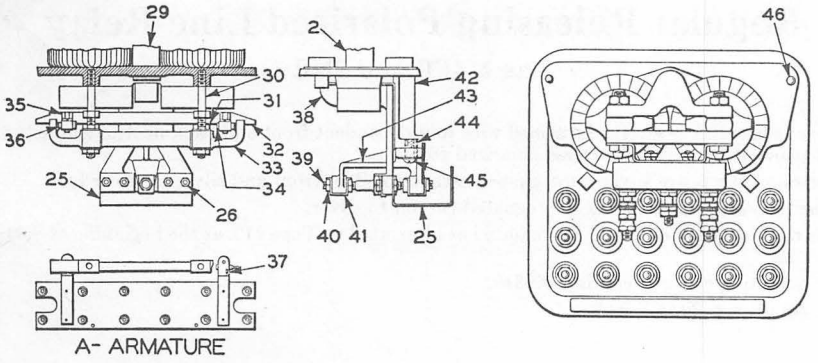
For mounting centers see Plate E2349.

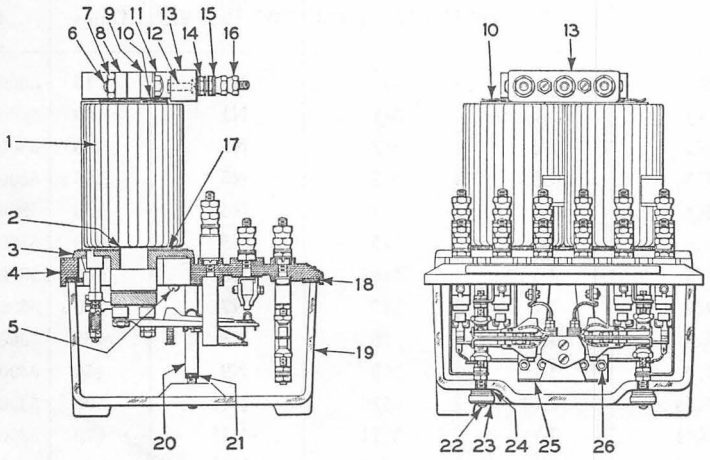
For details see Plate E2203.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.				Res. of Relay Ohms	Drawing Reference
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213		
K	L	M	N	16	53002–123 Gr. 6
K1	L1	M1	N1	50	53002–123 Gr. 7
K2	L2	M2	N2	100	53002–123 Gr. 8
K3	L3	M3	N3	136	53002–123 Gr. 9
K4	L4	M4	N4	150	53002–123 Gr. 22
K5	L5	M5	N5	200	53002–123 Gr. 10
K6	L6	M6	N6	250	53002–123 Gr. 11
K7	L7	M7	N7	300	53002–123 Gr. 12
K8	L8	M8	N8	400	53002–123 Gr. 13
K9	L9	M9	N9	450	53002–123 Gr. 14
K10	L10	M10	N10	500	53002–123 Gr. 16
K11	L11	M11	N11	670	53002–123 Gr. 17
K12	L12	M12	N12	750	53002–123 Gr. 18
K13	L13	M13	N13	1000	53002–123 Gr. 19
K14	L14	M14	N14	1500	53002–123 Gr. 25
K15	L15	M15	N15	2000	53002–123 Gr. 20
K16	L16	M16	N16	6400	53002–123 Gr. 24
K17	L17	M17	N17	8400	53002–123 Gr. 23
K18	L18	M18	N18	10400	53002–123 Gr. 21





Type K, Direct-Current, Polarized Relay
Size Six
For Repair Parts Only

Type K Direct-Current
Polarized Relay
Size 6

NOTE: This plate is included for ordering repair parts for older style relays only.
For details on latest type relays see Plate E2203.
For contact group parts see Plate E2203.
For mounting brackets see Plate E2349.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Neutral Armature Complete, as shown, for size six polarized relay (1–32, 1–33, 1–34, 2–35, 1–36, 1–37)	42561–9 Gr. 2
1	Coil, for relay, specify resistance	
2	Core, for coil	29514–33
3	Support, as shown, includes screws and pins for fastening to core	29513–10 0327 19539–1
4	Cover, for relay	29511–39
5	Screw, No. 10-32 x $\frac{5}{16}$″ rd. hd., for fastening support to cover	628–2
6	Screw, $\frac{5}{16}$″-18 x 1½″ hex. hd., for fastening yokes to core	2878–1
7	Nut, $\frac{5}{16}$″-18 x $\frac{7}{32}$″ hex., for screw Fig. 6	29954
8	Yoke, for cores and permanent magnet	42836–38
9	Yoke, for cores	42836–37
10	Spring Washer, for top of coils	36177–2
11	Support, for terminal block	53017–3
12	Screw, No. 10-32 x $\frac{13}{16}$″ rd. hd., with hex. nut and lock washer, for fastening terminal block to support, Fig. 11	3044–13 577–12 53029–3
13	Terminal Block, includes terminal posts	46048–8 Gr. 4
14	Nut, No. 14-24 x ⅛″ hex., for terminal post	46989–2
15	Washer, for terminal posts	1225–2
16	Nut, No. 14-24 x $\frac{5}{16}$″ hex., for terminal posts	42843–1
17	Washer, felt, for use under coils	1533–10
18	Gasket, rubber, for use between glass case and relay cover	13014–234
19	Glass Case, for housing relay contacts	37380–13
20	Bushing, insulating, for screw Fig. 22	35282–2
21	Knurled Nut, No. 14-24 x $\frac{3}{32}$″, for screw Fig. 22	35281–4

(*Continued on following page*)

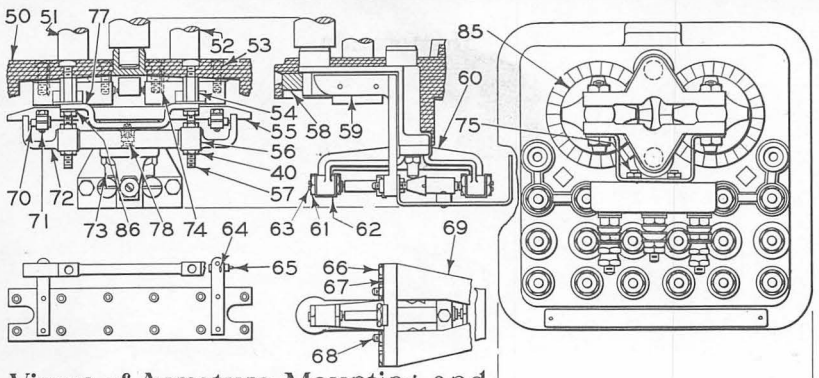
GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Direct-Current
Polarized Relay
Size 6

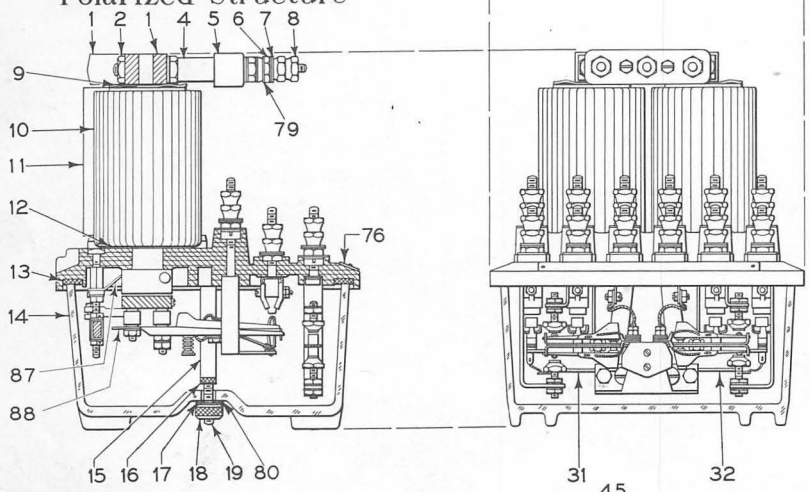
Drawing references are shown for convenience in checking shipping lists and invoices.

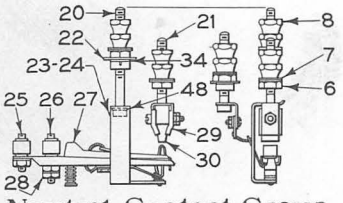
Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
22	Screw, No. 14-24 x 3½″ sq. hd., for fastening glass case to cover	48565–8
23	Nut, No. 14-24, with spring, for screw Fig. 22	846–8 786–150
24	Washer, rubber, for use between nut Fig. 23 and glass case	1333–12
25	Arm, for supporting polar contacts	53014–2
26	Screw, No. 10-32 x 9/16″ hex., for fastening arm to polar armature. Includes nuts and washers	21839–2 577–12 22543–9
29	Magnet, permanent, ¾″ dia., for relay	53007
30	Stud, No. 10-32 x 2 7/16″, shouldered, for fastening bracket Fig. 33, to support	8885–34
31	Nut, No. 10-32 x ⅛″ hex., for stud Fig. 30	577–12
31a	Lock Washer, for nuts on stud Fig. 30	1601–37
32	Neutral Armature Complete, for relay. Includes brackets for hinging, riveted in place	29524–9 Gr. 2
33	Bracket, for supporting armature	53016–1
34	Trunnion, as shown, headless, hinge pin for armature	35269–3
35	Screw, No. 8-32 x ⅜″ hex., with lock washer, for bracket on armature.	29525–7 53029–4
36	Trunnion, as shown, hinge pin for armature	35269–4
37	Escutcheon Pin, No. 16 x ½″, for securing bracket on armature to hinge pin	0677–2
38	Polar Armature Complete	39043–4 Gr. 2
39	Trunnion, for polar armature	29545–13
40	Nut, No. 14-24 x ⅛″ hex., for trunnion Fig. 39	42839–8
41	Lock Washer, for nut Fig. 40	1601–42
42	Pole, permanent, for polar armature. Includes screws for mounting to support Fig. 3	53024 12921–1
43	Bearing, supports trunnion for polar armature	53025
44	Pin, 1/16″ x 7/16″, for fastening bearing to pole	1886
45	Screw, No. 10-32 x ⅝″ rd. hd., for fastening bearing to pole	2784–1
46	Screw, No. 10-32 x 9/16″ fil. hd., for fastening support Fig. 3 to cover	0325–11

Memoranda

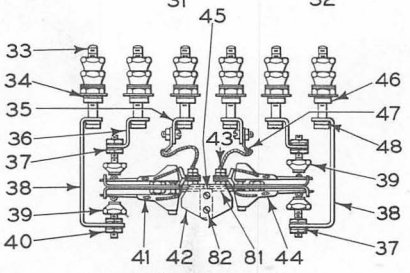


Views of Armature Mounting and Polarized Structure

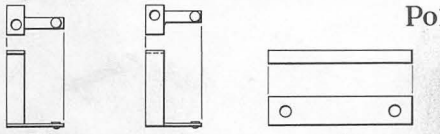


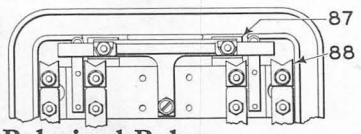


Neutral Contact Group



Polarized Contact Group





Type K, Direct-Current, Polarized Relay
Size Six

Type K Direct-Current
Polarized Relay
Size 6

For mounting brackets see Plate E2349.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
1	Yoke, for permanent magnet	42836–38
2	Screw, $\frac{5}{16}$"-18 x 1½" hex. hd., with hex. nut, for fastening yokes to cores	2878–1 29954
3	Yokes, for cores	42836–37
4	Support, for terminal block	53017–3
5	Terminal Block Complete, includes three terminal posts	46048–8 Gr. 4
6	Nut, No. 14-24 x ⅛" hex., for terminal posts	46989–2
7	Washer, for terminal posts	1225–2
8	Nut, No. 14-24 x $\frac{5}{16}$" hex., for terminal posts	42843–1
9	Spring Washer, for top of coils	36177–2
10	Coil, for relay, specify resistance	
11	Permanent Magnet, 1" dia., for relay	53007–1
11a	as above, except ¾" dia	53007
12	Felt Washer, for use under coils	1533–10
13	Gasket, rubber, for glass case	13014–234
14	Glass Case, for housing relay contacts	37380–13
15	Insulating Bushing, for screw Fig. 19	35282–2
16	Knurled Nut, No. 14-24 x $\frac{3}{32}$", for screw Fig. 19	35281–4
17	Washer, rubber, for use next to glass case, requires washer Fig. 80	1333–12
18	Knurled Nut, No. 14-24 rd., with spring, for screw Fig. 19	846–8 786–150
19	Screw, No. 14-24 x 3½" sq. hd., for fastening glass case to cover	48565–8
20	Terminal Post, No. 14-24 x $2\frac{7}{16}$" sq. hd., for contact group	350–9
21	Terminal Post, No. 14-24 x 1¾" for front contacts	38275–12
22	Washer, for terminal posts	45736–2
23	Back Support Complete, right hand, has silver contact	51320–5 Gr. 1
24	Back Support Complete, left hand, has silver contact	51320–5 Gr. 2

(*Continued on following page*)

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Direct-Current
Polarized Relay
Size 6

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
25	Insulator Complete, includes short screw, for fastening finger to neutral armature	42792–10
26	Insulator Complete, includes long screw, for fastening finger to neutral armature	42792–12
27	Finger Complete, articulated, has silver front and back contacts, for details and order references see Plate E2345 Fig. A	53011–41 Gr. 1
28	Nut, No. 10-32 x 1/8″ hex., with lock washer, for screws on insulators	577–12 53029–3
29	Holder Complete, for front contact, includes screw and nuts	53018–1 53018 367–1 37404–1
30	Front Contact, silver-impregnated carbon, for relay	13026–26
31	Terminal, as shown, for neutral finger	51559–7
32	Terminal, as shown, for neutral finger	51559–8
33	Terminal Post, No. 14-24 x 1¾″ sq. hd., for polarized contact	350–5
34	Lead Washer, for terminal posts	1533–41
35	Terminal, for connector Fig. 47	51559–39
36	Support, for contact Fig. 39	35921–32
37	Lock Washer, for nut Fig. 40	53029–3
38	Support, for contact Fig. 39	35921–33
39	Contact Complete, silver-impregnated carbon, for polarized contacts. Four required	42799–7 Gr. 9
40	Nut, No. 10-32 x 1/8″ hex., for contact Fig. 39, also for screw Fig. 57	577–12
41	Finger Complete, right hand, articulated, has silver contacts, for polarized contact group, for details and order reference see Plate E2345 Fig. F	53011–22 Gr. 4
42	Block, for holding fingers	47508–47

(*Continued on following page*)

Type K Direct-Current
Polarized Relay
Size 6

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
43	Screw, No. 6-32 x ¾″ fil. hd., with three hex. nuts and three washers, for fastening fingers to block Fig. 42	367–1 37404–1 2534–1
44	Finger Complete, left hand, articulated, has silver contacts, for polarized contact group, for details and order references see Plate E2345 Fig. E	53011–22 Gr. 3
45	Lock Washer, for screw Fig. 43	22543–14
46	Spanner Nut, No. 14-24, for terminal posts	42840–5
47	Connector Complete, with screw, nut and washer, for polarized contact group	42760–1 Gr. 6 3931–6 3614–1 53029–26
48	Lock Washer, for terminal posts	1225–75
50	Cover and pole, for relays	29511–14
50a	Cover and pole, with screws necessary to replace on old cover with metal supports for cores. This cover will change the relay to conform with the latest design. Includes the following: 1–50, 2–54, and 2–57	29511–14 577–14 351–16
51	Core Complete, as shown, with residual pins	29516–10 Gr. 3
52	Core Complete, as shown, with residual pins	29516–10 Gr. 4
53	Screw, No. 10-32 x ⅝″ fil. hd., for fastening cores to cover	12280–10
54	Nut, No. 10-32 x ⅝″ hex., for screw Fig. 57	577–14
55	Neutral Armature Complete. Includes brackets for trunnions riveted in place	29524–9 Gr. 2
56	Lock Washer, for nut Fig. 40	1601–37
57	Screw, No. 10-32 x 2½″ sq. hd., for fastening armature to cover	351–16
58	Filler Block, for cover	45211–6
59	Polarized Armature Complete, for relay	39043–21 Gr. 4
60	Bearing, for armature	53025–4

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Direct-Current
Polarized Relay
Size 6

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
61	Nut, No. 14-24 x 1/8" hex., for trunnion	42839–8
62	Lock Washer, for nut Fig. 61	1601–42
63	Trunnion, for polarized armature	29545–13
64	Escutcheon Pin, No. 16 x 1/2", for trunnion Fig. 65	0677–2
65	Trunnion, headless, for armature	35269–3
66	Screw, No. 10-32 x 9/16" hex. hd., with hex. nut, for fastening arm Fig. 69 to polarized structure	21839–2 577–12
67	Lock Washer, for nut on screw Fig. 66	22543–9
68	Screw, No. 10-32 x 7/8" rd. hd., with hex. nut, for fastening arm to polarized structure	373–3 577–12
69	Arm Complete, for supporting block Fig. 42	56854 Gr. 1
70	Trunnion, as shown, for armature	35269–4
71	Screw, No. 8-32 x 3/8" hex. hd., with lock washer, for bracket on armature	29525–7 53029–21
72	Bracket, for supporting armature	53016–1
73	Screw, No. 10-32, with lock washer, for fastening bearing Fig. 60 to pole	373–2 53029–3
74	Pin, 1/8" dia. x 3/4" lg., for fastening cores to cover	1478–1
75	Screw, No. 10-32 x 13/16" rd. hd., with hex. nut and lock washer, for fastening terminal block to support Fig. 4	3044–13 577–12 53029–3
76	Name Plate, with drive screws, for relay	401–132 54392–1
77	Armature Stop Complete, for relay	57922–1 Gr. 2
78	Screw, No. 10-32 x 9/16" hex. hd., with hex. nut and lock washer, for stop	13006–49 577–12 53029–3
79	Lock Washer, for terminal posts	53029–22
80	Washer, steel, for nut Fig. 18	50587–1

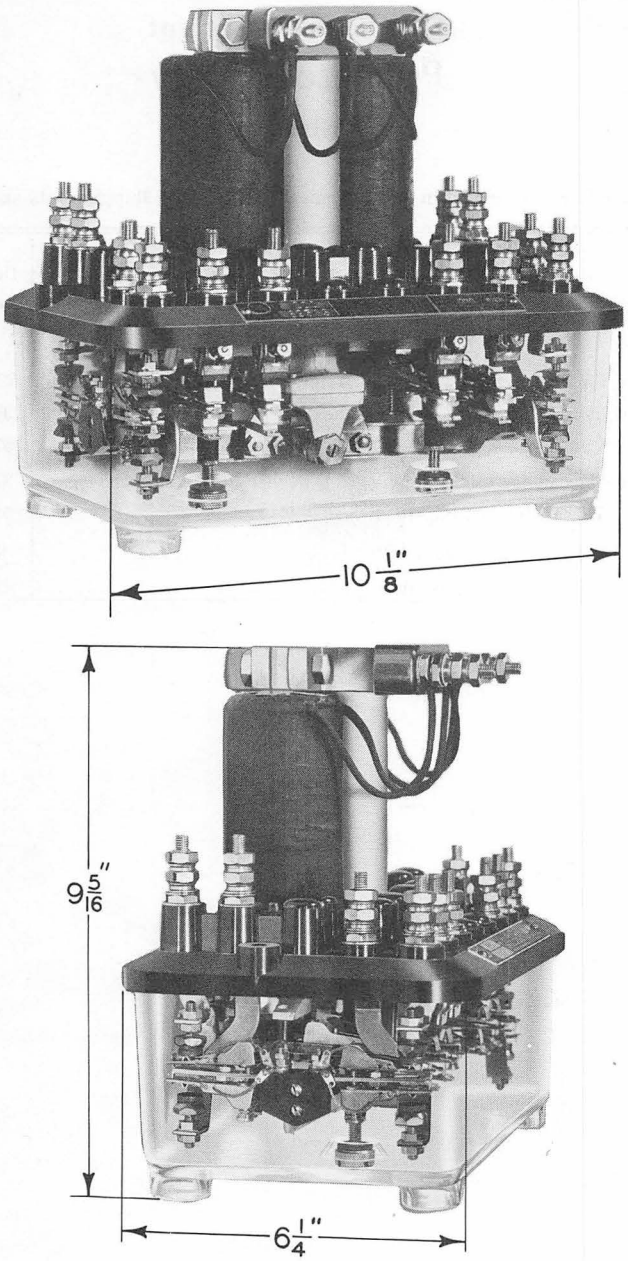
(*Continued on following page*)

April 1952 GENERAL RAILWAY SIGNAL COMPANY

Type K Direct-Current
Polarized Relay
Size 6

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
81	Plate, for reinforcing fingers Figs. 41 and 44	55911–22
82	Screw, No. 6-32 x ¾″ fil. hd., with hex. nut, for fastening block Fig. 42 to polarized structure	367–1 37404–1
85	Fibre Washer, for use between spring washer Fig. 9 and coils	34017–5
86	Lock Washer, for nut Fig. 40	53029–3
87	Plate, connector, two required	18053
88	Plate, relief gap, four required	18052



Type K, Direct-Current, Polarized Relay
Size Eight

Type K Direct-Current

Regular Releasing Polarized Line Relay

Size 8-4F and 4NR internally connected, see below

NOTE: This relay is always furnished with four front neutral contacts and four dependent normal and reverse polarized contacts. Each neutral finger connected internally to the correspondingly numbered polarized finger.

Neutral contacts are silver-impregnated carbon to silver front and silver to silver back. Polarized contacts are silver-impregnated carbon to silver.

This relay can only be connected for four circuits, each circuit must pass through a neutral front contact and a normal or reverse polarized contact in series.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.

For mounting centers see Plate E2349.

For details see Plate E2207.

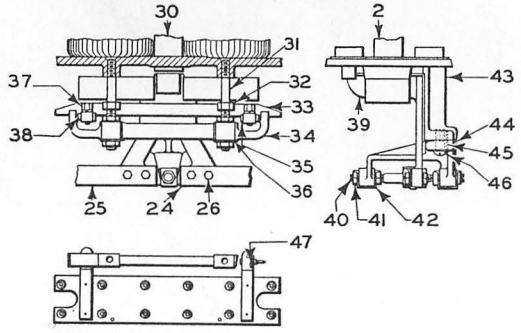
Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

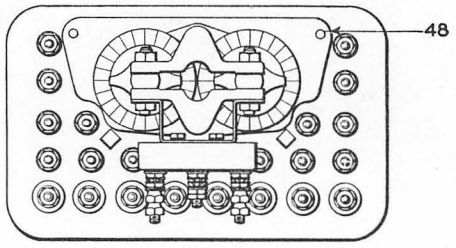
Fig. No.				Res. of Relay Ohms	Drawing Reference
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213		
A	C	D	E	No Coils	53002–111 Gr. 1
A5	C5	D5	E5	50	53002–111 Gr. 6
A6	C6	D6	E6	100	53002–111 Gr. 7
A7	C7	D7	E7	136	53002–111 Gr. 8
A8	C8	D8	E8	150	53002–111 Gr. 19
A9	C9	D9	E9	200	53002–111 Gr. 9
A10	C10	D10	E10	250	53002–111 Gr. 10
A11	C11	D11	E11	300	53002–111 Gr. 11
A12	C12	D12	E12	400	53002–111 Gr. 12
A13	C13	D13	E13	450	53002–111 Gr. 13
A14	C14	D14	E14	500	53002–111 Gr. 18
A15	C15	D15	E15	670	53002–111 Gr. 14
A16	C16	D16	E16	750	53002–111 Gr. 15
A17	C17	D17	E17	1000	53002–111 Gr. 16

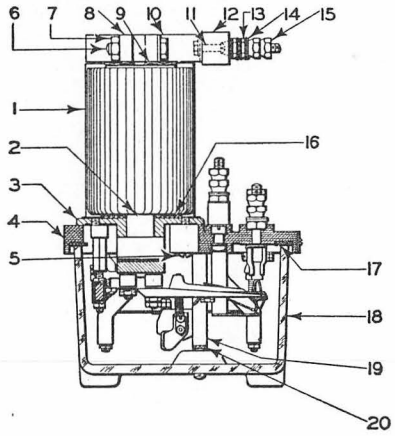
Memoranda

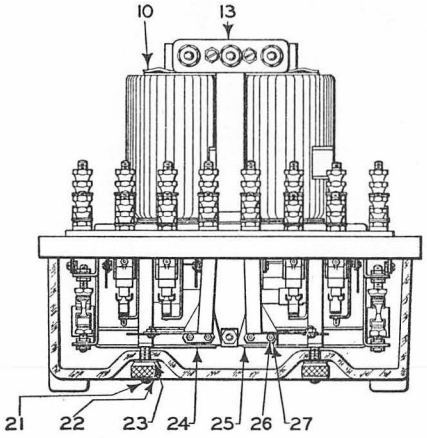
Memoranda



A-Armature







Type K, Direct-Current, Polarized Relay
Size Eight
For Repair Parts Only

Type K Direct-Current

Polarized Relay

Size 8

NOTE: This plate is included for ordering repair parts for older style relays only.
For details on latest type relays see Plate E2207.
For contact group parts see Plate E2207.
For mounting brackets see Plate E2349.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Neutral Armature Complete, as shown, for size eight polarized relay (1–33, 1–34, 1–35, 2–37, 1–38, 1–47)	42561–9 Gr. 2
1	Coil, for relay, specify resistance	
2	Core, with residual pins, for coil	29516–10 Gr. 3
3	Support, as shown, includes screws and pins for fastening to core	29513–10 12280–10 19539–1
4	Cover, for relay	29511–11
5	Screw, No. 10-32 x $\frac{15}{16}$″ rd. hd., for fastening support to yoke	628–2
6	Screw, $\frac{5}{16}$″-18 x 1½″ hex. hd., for fastening yokes to core	2878–1
7	Nut, $\frac{5}{16}$″-18 x $\frac{7}{32}$″ hex., for screw Fig. 6	29954
8	Yoke, for cores	42836–38
9	Spring Washer, for use on top of coils	36177–2
10	Support, for terminal block	53017–3
11	Screw, No. 10-32 x $\frac{13}{16}$″ rd. hd., with hex. nut and lock washer, for fastening terminal block to support Fig. 10	3044–13 577–12 53029–3
12	Terminal Block, includes terminal posts	46048–8 Gr. 4
13	Nut, No. 14-24 x ⅛″ hex., for terminal post	46989–2
14	Washer, for terminal posts	1225–2
15	Nut, No. 14-24 x $\frac{5}{16}$″ hex., for terminal posts	42843–1
16	Washer, felt, for use under coils	1533–10
17	Gasket, rubber, for use between glass case and relay cover	13014–236
18	Glass Case, for housing relay contacts	37380–5
19	Bushing, insulating, for screw Fig. 21	35282–2
20	Knurled Nut, No. 14-24 x $\frac{3}{32}$″ for screw Fig. 21	35281–4
21	Screw, No. 14-24 x 3½″ sq. hd., for fastening glass case to cover	48565–8

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY April 1952

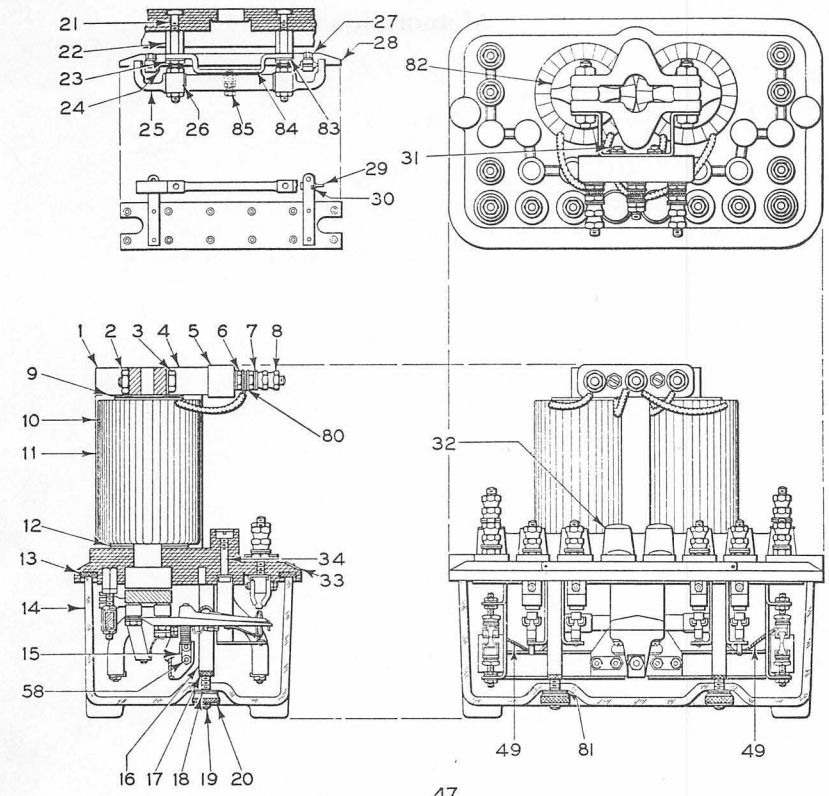
Type K Direct-Current
Polarized Relay
Size 8

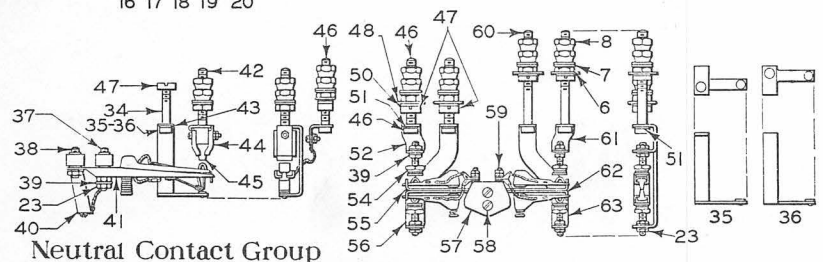
Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
22	Nut, No. 14-24, with spring, for screw Fig. 21	846-8 786-150
23	Washer, rubber, for use between nut Fig. 22 and glass case	1333-12
24	Arm, left hand, for supporting polar contacts	53014
25	Arm, right hand, for supporting polar contacts	53014-1
26	Screw, No. 10-32 x $\frac{9}{16}$" hex. hd., with hex. nut, for fastening arms to polar armature	21839-2 577-12
27	Plate Lock Washer, for screws Fig. 26	22543-9
30	Magnet, permanent, for relay, 1" dia., two required	53007-1
30a	as above, except $\frac{3}{4}$" dia	53007
31	Stud, No. 10-32 x $2\frac{7}{16}$", shouldered, for fastening bracket Fig. 34 to support	8885-34
32	Nut, No. 10-32 x $\frac{1}{8}$" hex., for stud Fig. 31	577-12
33	Neutral Armature Complete, for relay includes brackets for hinging, riveted in place	29524-9 Gr. 2
34	Bracket, for supporting armature	53016-1
35	Trunnion, as shown, headless, hinge pin for armature	35269-3
36	Lock Washer, for nuts on stud Fig. 31	1601-37
37	Screw, No. 8-32 x $\frac{3}{8}$" hex. hd., for bracket on armature	29525-7
38	Trunnion, as shown, hinge pin for armature	35269-4
39	Polar Armature Complete	39043-4 Gr. 6
40	Trunnion, for polar armature	29545-13
41	Nut, No. 14-24 x $\frac{1}{8}$" hex., for trunnion Fig. 40	42839-8
42	Lock Washer, for nut Fig. 41	1601-42
43	Pole, permanent, for polar armature. Includes screws for mounting to support Fig. 3	53024 12921-1
44	Bearing, supports trunnion for polar armature	53025
45	Pin, $\frac{1}{16}$" x $\frac{7}{16}$", for fastening bearing to pole	1886
46	Screw, No. 10-32 x $\frac{5}{8}$" rd. hd., for fastening bearing to pole	2784-1
47	Escutcheon Pin, No. 16 x $\frac{1}{2}$", for securing bracket on armature to hinge pin	0677-2
48	Screw, No. 10-32 x $\frac{9}{16}$" fil. hd., for fastening support Fig. 3 to cover	0325-11

Memoranda

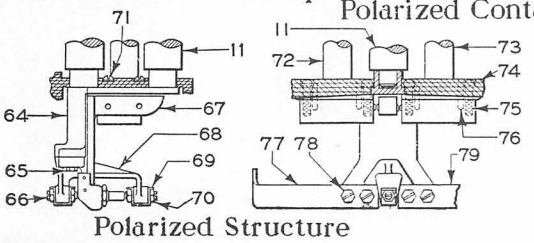
PLATE E2207





Neutral Contact Group

Polarized Contact Group



Polarized Structure

Type K, Direct-Current, Polarized Relay
Size Eight

April 1952 GENERAL RAILWAY SIGNAL COMPANY

Type K Direct-Current
Polarized Relay
Size 8-4F and 4NR internally connected

For mounting brackets see Plate E2349.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
1	Yoke, for cores	42836–38
2	Nut, $\frac{5}{16}$″-18 x $\frac{7}{32}$″ hex., for screw Fig. 3	29954
3	Screw, $\frac{5}{16}$″-18 x 1½″ hex. hd., for fastening yokes to cores	2878–1
4	Support, for terminal block	53017–3
5	Terminal Block Complete, includes terminal posts	46048–8 Gr. 4
6	Nut, No. 14-24 x ⅛″ hex., for terminal posts	46989–2
7	Washer, for terminal posts	1225–2
8	Nut, No. 14-24 x $\frac{5}{16}$″ hex., for terminal posts	42843–1
9	Spring Washer, for top of coils	36177–2
10	Coil, for relay, specify resistance	
11	Permanent Magnet, 1″ dia., for relay	53007–1
11a	as above, except ¾″ dia	53007
12	Felt Washer, for use under coils	1533–10
13	Gasket, rubber, for use between cover and glass case	13014–236
14	Glass Case, for housing relay contacts	37380–5
15	Lock Washer, for screw Fig. 58	22543–14
16	Insulating Bushing, for screw Fig. 19	35282–2
17	Knurled Nut, No. 14-24 x $\frac{3}{32}$″, for screw Fig. 19	35281–4
18	Washer, rubber, for use next to glass case, requires washer Fig. 81	1333–12
19	Screw, No. 14-24 x 3¾″ sq. hd., for fastening glass case to cover	48565–22
20	Nut, No. 14-24 rd., with spring, for screw Fig. 19	846–8 786–150
21	Screw, No. 10-32 x 2½″ sq. hd., for fastening armature bracket to cover	351–16
22	Nut, No. 10-32 x ⅝″ hex., for screw Fig. 21	577–14
23	Nut, No. 10-32 x ⅛″ hex., for screw Fig. 21, insulators Figs. 37 and 38, also for contacts Fig. 54	577–12
24	Trunnion, as shown, for armature	35269–4
25	Bracket, for supporting armature	53016–1

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Direct-Current

Polarized Relay

Size 8-4F and 4NR internally connected

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
26	Lock Washer, for nut Fig. 23	1601–37
27	Screw, No. 8-32 x 3/8″ hex. hd., with lock washer, for bracket on armature	29525–7 53029–21
28	Neutral Armature Complete, for relay. Includes brackets for trunnions riveted in place	29524–9 Gr. 2
29	Trunnion, headless, for armature	35269–3
30	Escutcheon Pin, No. 16 x 1/2″, for trunnion Fig. 29	0677–2
31	Screw, No. 10-32 x 13/16″ rd. hd., with hex. nut and washer, for fastening terminal block Fig. 5 to support Fig. 4	3044–13 577–12 53029–3
32	Plug, for relay cover	55282
33	Name Plate, with drive screws, for relay	401–164 54392–1
34	Screw, No. 14-24 x 1 1/4″ sq. hd., for fastening supports Figs. 35 and 36 to cover	350–1
35	Support Complete, right hand, has silver contact	51320–5 Gr. 1
36	Support Complete, left hand, has silver contact	51320–5 Gr. 2
37	Insulator Complete, includes long screw for fastening finger to neutral armature	42792–12
38	Insulator Complete, includes short screw, for fastening finger to neutral armature	42792–10
39	Lock Washer, for nuts on insulators and contacts	53029–3
40	Terminal, with screw, nut and washer, for relay	51559–48 3931–6 37404–1 53029–26
41	Finger Complete, articulated, has silver contacts, for details and order references see Plate E2345 Fig. A	53011–41 Gr. 1
42	Terminal Post, No. 14-24 x 1 3/4″, for front contacts	38275–12

(Continued on following page)

Type K Direct-Current

Polarized Relay

Size 8-4F and 4NR internally connected

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
43	Lock Washer, for screw Fig. 34	1225–75
44	Holder Complete, for front contact, includes screw and nuts	53018 53018–1 367–1 37404–1
45	Front Contact, silver-impregnated carbon, for relay	13026–26
46	Terminal Post, No. 14-24 x 1⅞″ sq. hd., for relay	350–6
47	Spanner Nut, No. 14-24 for terminal posts	42840–5
48	Washer, for terminal posts	45736–2
49	Connector Complete, for polarized contacts	42760–1 Gr. 17
50	Lead Washer, for terminal posts	1533–41
51	Lock Washer, for nut, for use in position shown	1601–53
52	Support, left hand, for contact Fig. 54	35921–27
54	Contact Complete, silver-impregnated carbon, for polarized contact group	42799–7 Gr. 13
55	Finger Complete, right hand, articulated, has silver contacts, for details and order references see Plate E2345 Fig. H	53011–22 Gr. 2
56	Support, left hand, for contact Fig. 54	35921–23
57	Block, for fingers Figs. 55 and 62	47508–47
58	Screw, No. 6-32 x ¾″ fil. hd., with hex. nut, for fastening block Fig. 57 to arms Figs. 77 and 79	367–1 37404–1
59	Screw, No. 6-32 x ¾″ fil. hd., with three hex. nuts and three washers, for fastening fingers Figs. 55 and 62 to block Fig. 57	367–1 37404–1 2534–1
60	Terminal Post, No. 14-24 x 2 7/16″ sq. hd., for relay	350–9
61	Support, right hand, for contact Fig. 54	35921–28
62	Finger Complete, left hand, articulated, has silver contact, for details and order references see Plate E2345 Fig. G	53011–22 Gr. 1
63	Support, right hand, for contact Fig. 54	35921–22

(*Continued on following page*)

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Direct-Current

Polarized Relay

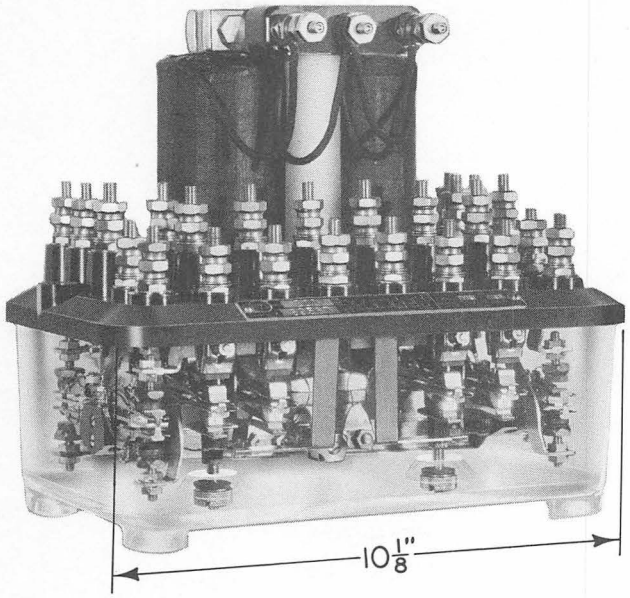
Size 8-4F and 4NR internally connected

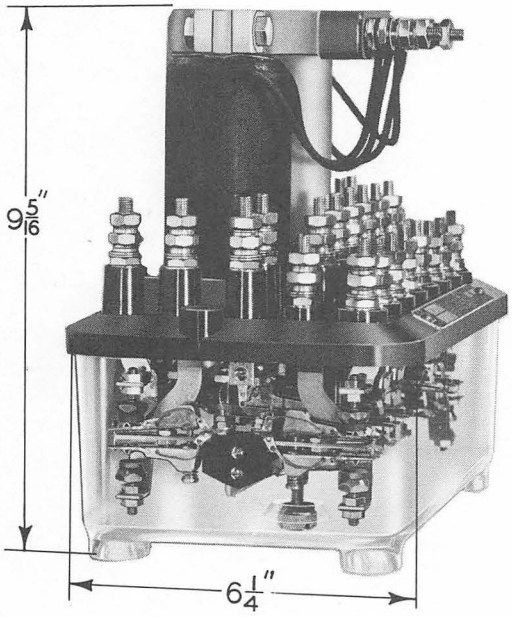
Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
64	Permanent Pole, as shown, for polarized structure	53024
65	Screw, No. 10-32 x 5/8" hex. hd., with lock washer, for fastening bearing to pole	13006-47 0622
66	Trunnion, for polarized armature	29545-13
67	Polarized Armature Complete, for relay	39043-4 Gr. 6
68	Bearing, for polarized armature	53025
69	Lock Washer, for nut Fig. 70	1601-42
70	Nut, No. 14-24 x 1/8" hex., for trunnion	42839-8
71	Screw, No. 8-32 x 3/8" rd. hd., with lock washer, for fastening permanent pole to cover	2430-29 43058
72	Core Complete, as shown, with residual pins	29516-10 Gr. 4
73	Core Complete, as shown, with residual pins	29516-10 Gr. 3
74	Cover, for relay	29511-11
75	Screw, No. 10-32 x 5/8" fil. hd., for fastening cores to cover	12280-10
76	Pin, 1/8" x 3/4", for locking cores to cover	1478-1
77	Arm, right hand, for supporting block Fig. 57	53014-1
78	Screw, No. 10-32 x 9/16" hex. hd., with hex. nut and lock washer, for fastening arms Figs. 77 and 79 to polarized structure	21839-2 577-12 22543-9
79	Arm, left hand, for supporting block Fig. 57	53014
80	Lock Washer, for terminal posts	53029-22
81	Washer, steel, for nut Fig. 20	50587-1
82	Fibre Washer, for use between spring washer Fig. 9 and coils	34017-5
83	Lock Washer, for nut Fig. 23	53029-3
84	Armature Stop Complete, for relay	57922-1 Gr. 2
85	Screw, No. 10-32 x 9/16" hex. hd., with hex. nut and lock washer, for stop	13006-49 577-12 53029-3

Memoranda

GENERAL RAILWAY SIGNAL COMPANY April 1952





Type K, Direct-Current, Polarized Relay
Size Eight

April 1952 GENERAL RAILWAY SIGNAL COMPANY

Type K Direct-Current

Regular Releasing Polarized Line Relay

Size 8-4FB and 4NR

NOTE: This relay is always furnished with four dependent front and back neutral contacts and four dependent normal and reverse polarized contacts.

Neutral contacts are silver-impregnated carbon to silver front and silver to silver back.

Polarized contacts are silver-impregnated carbon to silver.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.

For mounting centers see Plate E2349.

For details see Plate E2213.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.				Res. of Relay Ohms	Drawing Reference
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213		
A	B	C	G	No Coils	53002–112 Gr. 1
A5	B5	C5	G5	50	53002–112 Gr. 6
A6	B6	C6	G6	100	53002–112 Gr. 7
A7	B7	C7	G7	136	53002–112 Gr. 8
A8	B8	C8	G8	150	53002–112 Gr. 19
A9	B9	C9	G9	200	53002–112 Gr. 9
A10	B10	C10	G10	250	53002–112 Gr. 10
A11	B11	C11	G11	300	53002–112 Gr. 11
A12	B12	C12	G12	400	53002–112 Gr. 12
A13	B13	C13	G13	450	53002–112 Gr. 13
A14	B14	C14	G14	500	53002–112 Gr. 17
A15	B15	C15	G15	670	53002–112 Gr. 14
A16	B16	C16	G16	750	53002–112 Gr. 15
A17	B17	C17	G17	1000	53002–112 Gr. 16
A18	B18	C18	G18	2000	53002–112 Gr. 20

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Direct-Current

Slow Releasing Polarized Line Relay

Size 8-4FB and 4NR

NOTE: This relay is always furnished with four dependent front and back neutral contacts and four dependent normal and reverse polarized contacts.

Neutral contacts are silver-impregnated carbon to silver front and silver to silver back.

Polarized contacts are silver-impregnated carbon to silver.

If relays with longer releasing time are desired, customer should so specify giving full partiuclars.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.

For mounting centers see Plate E2349.

For details see Plate E2213.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No. With Spring Wall Hanger "X" Page 213	Fig. No. With Resilient Wall Hanger "Y" Page 213	Fig. No. With Shelf Plate "Z" Page 213	Fig. No. With Comb. Bracket "W" Page 213	Res. of Relay Ohms	Minimum Time of Release Seconds at—Amps.	Drawing Reference
D	**E**	**F**	**H**	50	.5 at .051	53002–112 Gr. 50
D1	**E1**	**F1**	**H1**	100	.5 at .049	53002–112 Gr. 51
D2	**E2**	**F2**	**H2**	290	.5 at .024	53002–112 Gr. 52
D3	**E3**	**F3**	**H3**	400	.5 at .021	53002–112 Gr. 53
D4	**E4**	**F4**	**H4**	500	.5 at .020	53002–112 Gr. 54
D5	**E5**	**F5**	**H5**	600	.5 at .018	53002–112 Gr. 55
D6	**E6**	**F6**	**H6**	900	.5 at .015	53002–112 Gr. 56
			Partial Slow Release			
D50	**E50**	**F50**	**H50**	100	*.1 at .035	53002–112 Gr. 75
D51	**E51**	**F51**	**H51**	200	*.1 at .026	53002–112 Gr. 76
D52	**E52**	**F52**	**H52**	450	*.1 at .0195	53002–112 Gr. 77
D53	**E53**	**F53**	**H53**	740	*.1 at .015	53002–112 Gr. 78

*This approx. release time is based on approx. 150% of working current.

Type K Direct-Current

Regular Releasing Polarized Track Relay

Size 8-4FB and 4NR

NOTE: This relay is always furnished with four dependent front and back neutral contacts and four dependent normal and reverse polarized contacts.

Neutral contacts are silver-impregnated carbon to silver front and silver to silver back.

Polarized contacts are silver-impregnated carbon to silver.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.

For mounting centers see Plate E2349.

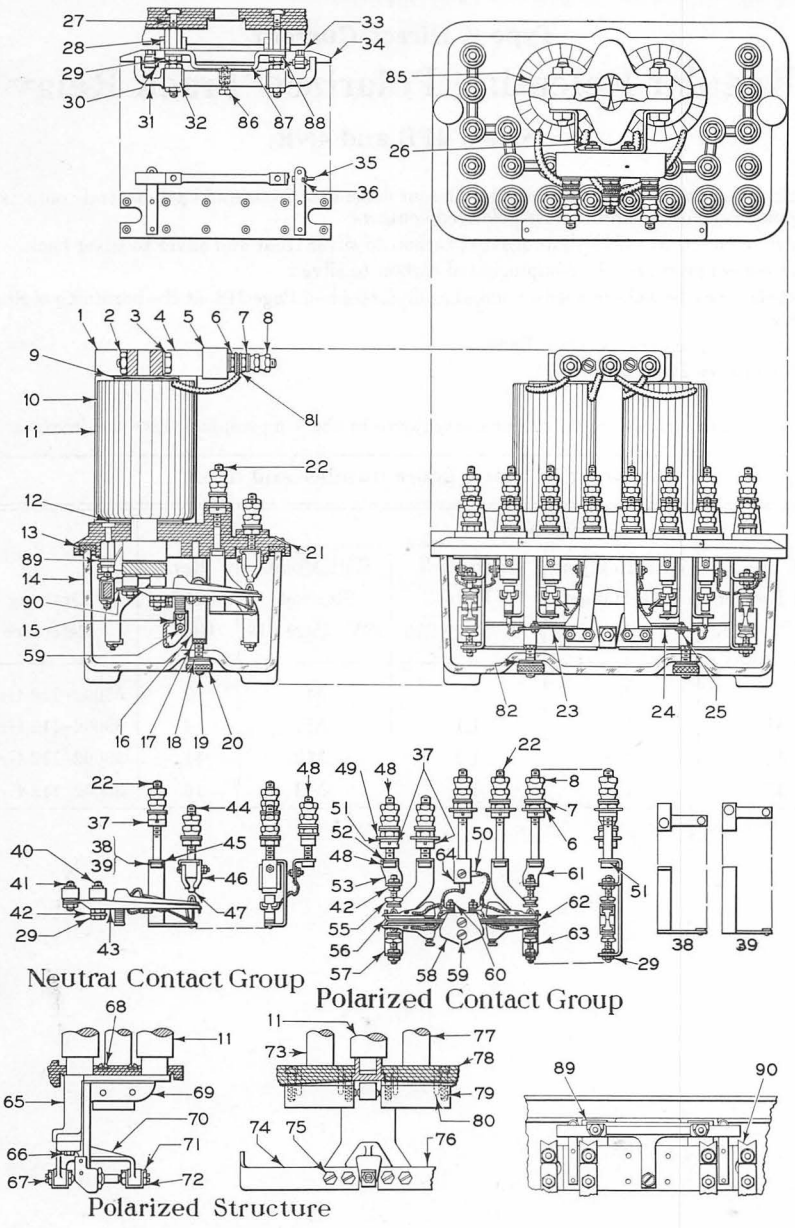
For details see Plate E2213.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.				Res. of Relay Ohms	Drawing Reference
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213		
J	K	L	M	2	53002–112 Gr. 2
J1	K1	L1	M1	4	53002–112 Gr. 3
J2	K2	L2	M2	11	53002–112 Gr. 4
J3	K3	L3	M3	16	53002–112 Gr. 5

PLATE E2213



Type K Direct-Current, Polarized Relay
Size 8

Type K Direct-Current

Polarized Relay

Size 8-4FB and 4NR

For mounting brackets see Plate E2349.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
1	Yoke, for cores	42836–38
2	Nut, $\frac{5}{16}$″-18 x $\frac{7}{32}$″ hex., for screw Fig. 3	29954
3	Screw, $\frac{5}{16}$″-18 x $1\frac{1}{2}$″ hex. hd., for fastening yokes to cores	2878–1
4	Support, for terminal block	53017–3
5	Terminal Block Complete, includes terminal posts	46048–8 Gr. 4
6	Nut, No. 14-24 x $\frac{1}{8}$″ hex., for terminal posts	46989–2
7	Washer, for terminal posts	1225–2
8	Nut, No. 14–24 x $\frac{5}{16}$″ hex., for terminal posts	42843–1
9	Spring Washer, for top of coils	36177–2
10	Coil, for relay, specify resistance	
11	Permanent Magnet, 1″ dia., for relay	53007–1
11a	as above, except $\frac{3}{4}$″ dia	53007
12	Felt Washer, for use under coils	1533–10
13	Gasket, rubber, for use between cover and glass case	13014–236
14	Glass Case, for housing relay contacts	37380–5
15	Lock Washer, for screw Fig. 59	22543–14
16	Insulating Bushing, for screw Fig. 19	35282–2
17	Knurled Nut, No. 14-24 x $\frac{3}{32}$″, for screw Fig. 19	35281–4
18	Washer, rubber, for use next to glass case, requires washer Fig. 82	1333–12
19	Screw, No. 14-24 x $3\frac{3}{4}$″ sq. hd., for fastening glass case to cover	48565–22
20	Knurled Nut, No. 14-24 rd., with spring, for screw Fig. 19	846–8 786–150
21	Name Plate, with drive screws, for relay	401–163 54392–1
22	Terminal Post, No. 14-24 x $2\frac{7}{16}$″ sq. hd., for relay	350–9
23	Terminal, as shown, for relay	51559–7
24	Terminal, as shown, for relay	51559–8

(Continued on following page)

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Type K Direct-Current

Polarized Relay

Size 8-4FB and 4NR

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
25	Screw, No. 6-32 x 1/4" fil. hd., includes hex. nut and washer, for terminals Figs. 23 and 24	3931-6 3614-1 53029-26
26	Screw, No. 10-32 x 13/16" rd. hd., with hex. nut and washer, for fastening terminal block Fig. 5 to support Fig. 4	3044-13 577-12 53029-3
27	Screw, No. 10-32 x 2 1/2" sq. hd., for fastening armature bracket to cover	351-16
28	Nut, No. 10-32 x 5/8" hex., for screw Fig. 27	577-14
29	Nut, No. 10-32 x 1/8" hex., for screw Fig. 27, insulators Figs. 40 and 41, also for contact Fig. 55	577-12
30	Trunnion, as shown, for armature	35269-4
31	Bracket, for supporting armature	53016-1
32	Lock Washer, for nut Fig. 29	1601-37
33	Screw, No. 8-32 x 3/8" hex. hd., with lock washer, for bracket on armature	29525-7 53029-21
34	Neutral Armature Complete, for relay. Includes brackets for trunnions riveted in place	29524-9 Gr. 2
35	Trunnion, headless, for armature	35269-3
36	Escutcheon Pin, No. 16 x 1/2", for trunnion	0677-2
37	Spanner Nut, No. 14-24, for terminal posts	42840-5
38	Support Complete, right hand, has silver contact	51320-5 Gr. 1
39	Support Complete, left hand, has silver contact	51320-5 Gr. 2
40	Insulator Complete, includes long screw, for fastening finger to neutral armature	42792-12
41	Insulator Complete, includes short screw, for fastening finger to neutral armature	42792-10
42	Lock Washer, for nuts on insulators and contacts	53029-3

(Continued on following page)

Type K Direct-Current

Polarized Relay

Size 8-4FB and 4NR

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
43	Finger Complete, articulated, has silver contacts, for details and order references see Plate E2345 Fig. A	53011–41 Gr. 1
44	Terminal Post, No. 14-24 x 1¾″, for front contacts	38275–12
45	Lock Washer, for terminal post Fig. 22	1225–75
46	Holder Complete, for front contact, includes screw and nuts	53018 53018–1 367–1 37404–1
47	Front Contact, silver-impregnated carbon, for relay	13026–26
48	Terminal Post, No. 14-24 x 1⅞″ sq. hd., for relay	350–6
49	Washer, for terminal posts	45736–2
50	Connector Complete, for polarized contacts	42760–1 Gr. 6
51	Lead Washer, for terminal posts	1533–41
52	Lock Washer, for nut, for use in position shown	1601–53
53	Support, left hand, for contact Fig. 55	35921–27
55	Contact Complete, silver-impregnated carbon, for polarized contact group	42799–7 Gr. 13
56	Finger Complete, right hand, articulated, has silver contacts, for details and order references see Plate E2345 Fig. H	53011–22 Gr. 2
57	Support, left hand, for contact Fig. 55	35921–23
58	Block, for fingers Figs. 56 and 62	47508–47
59	Screw, No. 6-32 x ¾″ fil. hd., with hex. nut, for fastening block Fig. 58 to arms Figs. 74 and 76	367–1 37404–1
60	Screw, No. 6-32 x ¾″ fil. hd., with three hex. nuts and three washers, for fastening fingers Figs. 56 and 62 to block Fig. 58	367–1 37404–1 2534–1
61	Support, right hand, for contact Fig. 55	35921–28
62	Finger Complete, left hand, articulated, has silver contacts, for details and order references see Plate E2345 Fig. G	53011–22 Gr. 1

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Direct-Current

Polarized Relay

Size 8-4FB and 4NR

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
63	Support, right hand, for contact Fig. 55	35921–22
64	Terminal, short, for polarized contacts	51559–39
65	Permanent Pole, as shown, for polarized structure	53024
66	Screw, No. 10-32 x 5/8″ hex. hd., with lock washer, for fastening bearing to pole	13006–47 0622
67	Trunnion, for polarized armature	29545–13
68	Screw, No. 8-32 x 3/8″ rd. hd., with lock washer, for fastening permanent pole to cover	2430–29 43058
69	Polarized Armature Complete, for relay	39043–4 Gr. 6
70	Bearing, for polarized armature	53025
71	Lock Washer, for nut Fig. 72	1601–42
72	Nut, No. 14-24 x 1/8″ hex., for trunnion	42839–8
73	Core Complete, as shown, with residual pins	29516–10 Gr. 4
74	Arm, right hand, for supporting block Fig. 58	53014–1
75	Screw, No. 10-32 x 9/16″ hex. hd., with hex. nut and lock washer, for fastening arms Figs. 74 and 76 to polarized structure	21839–2 577–12 22543–9
76	Arm, left hand, for supporting block Fig. 58	53014
77	Core Complete, as shown, with residual pins	29516–10 Gr. 3
78	Cover, for relay	29511–11
79	Screw, No. 10-32 x 5/8″ fil. hd., for fastening cores to cover	12280–10
80	Pin, 1/8″ x 3/4″, for locking cores to cover	1478–1
81	Lock Washer, for terminal post	53029–22
82	Washer, steel, for nut Fig. 20	50587–1
85	Fibre Washer, for use between spring washer Fig. 9 and coils	34017–5
86	Screw, No. 10-32 x 9/16″ hex. hd., with hex. nut and lock washer, for stop	13006–49 577–12 53029–3

(*Continued on following page*)

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Type K Direct-Current
Polarized Relay
Size 8-4FB and 4NR

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
87	Armature Stop Complete, for relay	57922–1 Gr. 2
88	Lock Washer, for nut Fig. 29	53029–3
89	Plate, connector, two required	18053
90	Plate, relief gap, four required	18052

Memoranda

Type K
Tractive-Armature
Direct-Current
Retained-Neutral
Polarized Relays

Type K, Tractive-Armature Direct-Current Retained-Neutral Polarized Relays

Foreword

When the current in the operating circuit of a regular polarized relay is pole-changed to effect operation of the polarized contacts, the neutral armature momentarily releases because the current, and therefore the magnetic flux, passes through zero. This is true even though the pole-changer reversing the current is a quick-acting relay.

Because this momentary release of the neutral armature is progressive in dependently arranged circuits of the type so common in signaling systems, and since this "tumbledown" is undesirable, it has been the practice to provide a time element that would prevent progressive "tumbledown."

Usually, the time element was secured by repeating the neutral armature of the polarized relay with an auxiliary neutral relay of the slow release type.

Convinced that a single relay possessing the combined characteristics of the polarized relay and the repeater relay would simplify circuits, reduce current consumption, reduce number of service interruptions, simplify maintenance problems and cut stock inventories, our Engineers developed the retained-neutral polarized relays to fill the need. In these relays the neutral armature is electro-magnetically retained in its energized position when the relay current is reversed to effect polar contact operation.

The magnetic structure is composed of two separate parts: 1st, the regular polarized relay structure that acts upon the regular neutral armature and the regular polarized armature; and 2nd, the retaining structure, that acts upon the retaining armature which is attached to the neutral armature by means of a non-magnetic extension.

The regular relay coils are located on the regular cores, while the retaining circuit, which is normally closed, is divided into two parts: 1st, that part located on the regular cores and, therefore, inductively coupled to the regular coils; and 2nd, that part located on the retaining cores. Because of this arrangement, a voltage is induced in the first part of the retaining winding by a change in the magnetic flux in the regular magnetic structure as a result of a change in current in the regular coils. This induced voltage impressed on the second part of the retaining winding causes current to flow through it, which produces a magnetic flux in the retaining cores.

While these relays have certain slow-release and slow pickup characteristics, they should not be installed merely as a substitute for regular polarized relays of the slow-release and slow pickup type.

These relays have been designed especially for the purpose of securing neutral armature retention as the relay current is being pole-changed to effect polar contact operation.

As with the R-N.P. relay for line application, the retaining feature of the R-N.P. relay for track application is effective at the reverse working current value when the relay current is pole-changed by a neutral relay and there is no shunt resistance across the coils; however, in a track circuit where, of course, there is an appreciable ballast leakage (due to the presence of ballast or shunt resistance across the relay coils) the retaining characteristic is slightly modified and it becomes necessary to maintain a minimum relay current equal to 110 per cent of the working value.

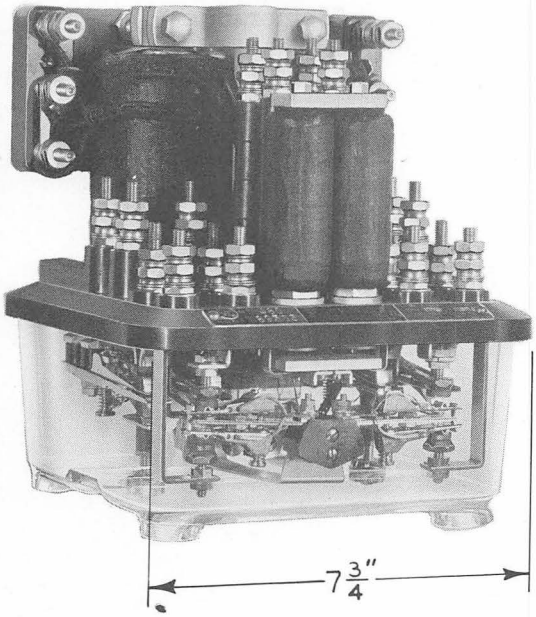
There are locations, such as cut-sections, when the polarized contacts are used to pole-change the adjacent retained-neutral polarized relay current.

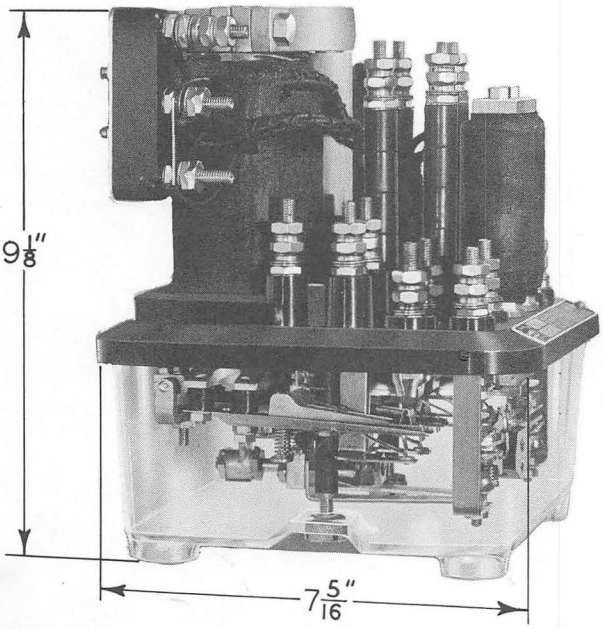
It should be remembered when designing circuits that the retained-neutral feature of these relays is not effective if the control circuit is opened and closed at the same polarity, or if the control circuit is pole-changed from normal to reverse and back to normal (or vice versa) in rapid succession as by the pumping action of some pole-changing relay in its control circuit.

See Section E Part 21 for additional information relative to carrying capacity, description of contacts, mounting of relays, etc.

Memoranda

Memoranda





Type K, Direct-Current
Retained-Neutral, Polarized Line Relay
Size Six

Type K Direct-Current

Retained-Neutral Polarized Line Relay

Size 6-4FB and 2NR

NOTE: This relay is always furnished with four dependent front and back neutral contacts and two dependent normal and reverse polarized contacts.

Neutral contacts are silver-impregnated carbon to silver front and silver to silver back.

Polarized contacts are silver-impregnated carbon to silver.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.

For mounting centers see Plate E2349.

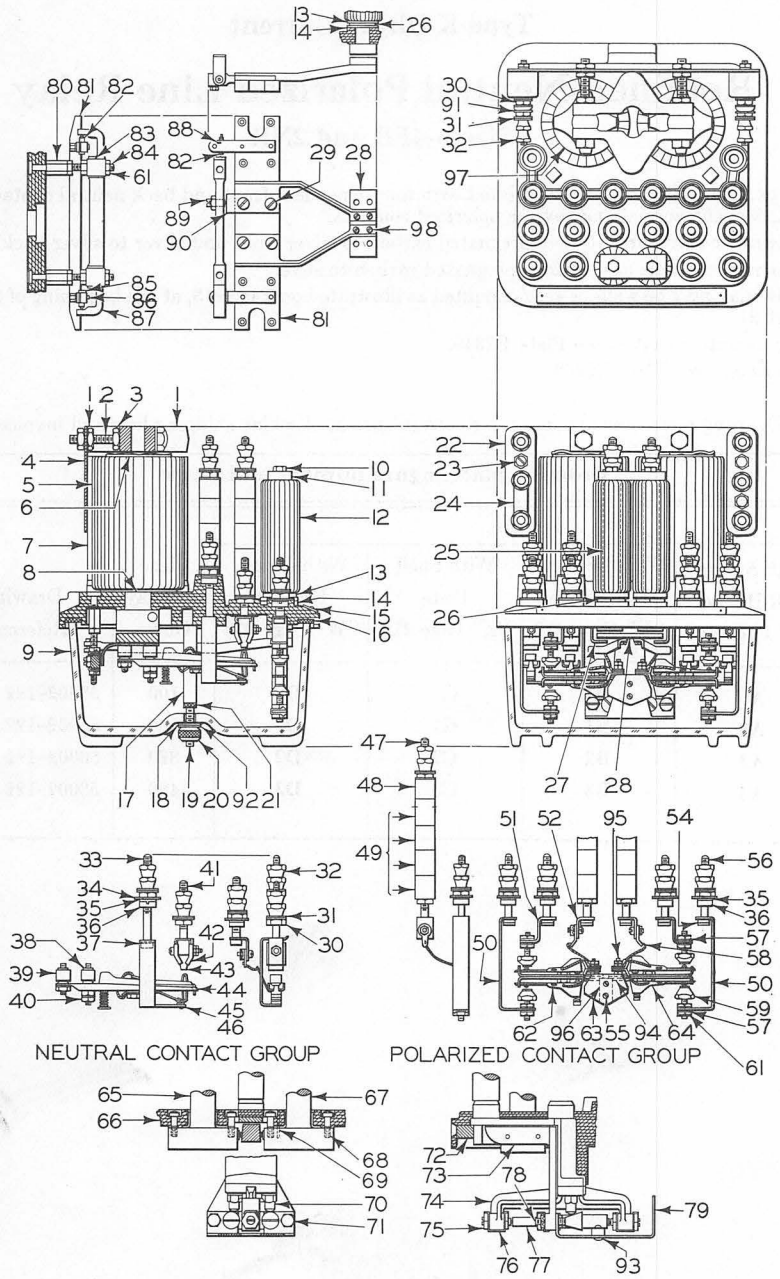
For details see Plate E2253.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.				Res. of Relay Ohms	Drawing Reference
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213		
A	B	C	D	100	53002–122 Gr. 2
A1	B1	C1	D1	200	53002–122 Gr. 3
A2	B2	C2	D2	320	53002–122 Gr. 4
A3	B3	C3	D3	480	53002–122 Gr. 5

PLATE E2253



Type K, Direct-Current
Retained-Neutral Polarized Line Relay
Size Six

Type K Direct-Current

Retained-Neutral Polarized Line Relay

Size 6

For mounting brackets see Plate E2349.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
1	Yoke, for cores	42836–38
2	Screw, $\frac{5}{16}$″-18 x $2\frac{3}{8}$″ hex. hd., for fastening yokes to cores	3440–18
3	Nut, $\frac{5}{16}$″-18 x $\frac{7}{32}$″ hex., for screw Fig. 2	29954
4	Plate, for supporting terminal blocks	51168–20
5	Coil, for relay, specify resistance	
6	Spring Washer, for top of coils	36177–2
7	Permanent Magnet, for relay	53007
8	Felt Washer, for use under coils	1533–10
9	Glass Case, for housing relay contacts	37380–13
10	Screw, No. 10-32 x $\frac{9}{16}$″ hex. hd., for fastening yoke Fig. 11 to cores Fig. 25	13006–16
11	Yoke, for cores Fig. 25	42836–22
12	Coil, for relay, specify resistance	
13	Felt Washer, for use under coil Fig. 12	21119
14	Washer, for use between nut Fig. 26 and cover	1225–33
15	Name Plate, with drive screws, for relay	401–131 54392–1
16	Gasket, rubber, for glass case	13014–234
17	Insulating Bushing, for screw Fig. 19	35282–2
18	Washer, rubber, for use next to glass case, requires washer Fig. 92	1333–12
19	Screw, No. 14-24 x $3\frac{1}{2}$″ sq. hd., for fastening glass case to cover	48565–8
20	Knurled Nut, No. 14-24, rd., with spring, for screw Fig. 19	846–8 786–150
21	Knurled Nut, No. 14-24 x $\frac{3}{32}$″, for screw Fig. 19	35281–4
22	Terminal Block Complete, includes three terminal posts	46048–18 Gr. 1
23	Screw, No. 10-32 x $\frac{13}{16}$″ rd. hd., with hex. nut, for fastening terminal block to plate Fig. 4	3044–13 577–12
24	Connector, as shown, for terminal block	4906–97

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Direct-Current

Retained-Neutral Polarized Line Relay

Size 6

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
25	Core, for coil Fig. 12	29514–55
26	Nut, ½″-32 x $\frac{5}{32}$″ hex., for fastening core Fig. 25 to cover	6358–5
27	Backstop, for retaining armature Fig. 28	55068
28	Retaining Armature Complete, as shown	29524–17 Gr. 1
29	Screw, No. 10-32 x $\frac{5}{16}$″ fil. hd., with lock washer, for fastening retaining armature Fig. 28 to neutral armature	53348–1 53029–3
30	Nut, No. 14-24 x ⅛″ hex., for terminal posts	46989–2
31	Washer, for terminal posts	1225–2
32	Nut, No. 14-24 x $\frac{5}{16}$″ hex., for terminal posts	42843–1
33	Terminal Post, No. 14-24 x $2\frac{7}{16}$″ sq. hd., for relay	350–9
34	Washer, for terminal posts	45736–2
35	Lead Washer, for terminal posts	1533–41
36	Spanner Nut, No. 14-24, for terminal posts	42840–5
37	Lock Washer, for terminal posts	1225–75
38	Insulator Complete, includes long screw, for fastening finger to neutral armature	42792–12
39	Insulator Complete, includes short screw, for fastening finger to neutral armature	42792–10
40	Nut, No. 10-32 x ⅛″ hex., with lock washer, for screws on insulators	577–12 53029–3
41	Terminal Post, No. 14-24 x $1\frac{3}{4}$″, for front contacts	38275–12
42	Holder Complete, for front contact, includes screw and nuts	53018–1 53018 367–1 37404–1
43	Front Contact, silver-impregnated carbon, for relay	13026–26
44	Finger Complete, articulated, has silver front and back contacts, for details and order references see Plate E2345, Fig. A	53011–41 Gr. 1
45	Back Support Complete, right hand, has silver contact	51320–5 Gr. 1

(*Continued on following page*)

Type K Direct-Current

Retained-Neutral Polarized Line Relay

Size 6

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
46	Back Support Complete, left hand, has silver contact	51320–5 Gr. 2
47	Terminal Post, No. 14-24 x 5″ sq. hd., for polarized contacts	350–17
48	Insulating Bushing, $\frac{9}{16}$″ lg., for terminal post Fig. 47	7350–109
49	Insulating Bushing, $\frac{11}{16}$″ lg., for terminal post Fig. 47	7350–29
50	Support, for contact Fig. 59	35921–33
51	Support, for contact Fig. 59	35921–32
52	Terminal, for connector Fig. 58	51559–39
54	Lock Washer, as shown, for terminal posts	1601–53
55	Screw, No. 6-32 x $\frac{3}{4}$″ fil. hd., with hex. nut, for fastening block Fig. 63 to arm Fig. 79	367–1 37404–1
56	Terminal Post, No. 14-24 x $1\frac{3}{4}$″ sq. hd., for polarized contacts	350–5
57	Lock Washer, for nut Fig. 61	53029–3
58	Connector Complete, with screw, nut and washer, for polarized contact group	42760–1 Gr. 6 3931–6 3614–1 53029–26
59	Contact Complete, silver-impregnated carbon, for polarized contact group. Four required	42799–7 Gr. 9
61	Nut, No. 10-32 x $\frac{1}{8}$″ hex., for contact Fig. 59, also for screw Fig. 84	577–12
62	Finger Complete, right hand, articulated, has silver contacts, for polarized contact group, for details and order references see Plate E2345 Fig. F	53011–22 Gr. 4
63	Block, for holding fingers	47508–47
64	Finger Complete, left hand, articulated, has silver contacts, for polarized contact group, for details and order references see Plate E2345 Fig. E	53011–22 Gr. 3
65	Core Complete, as shown, with residual pins	29516–10 Gr. 3
66	Cover and Pole, for relays	29511–55
67	Core Complete, as shown, with residual pins	29516–10 Gr. 4

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Direct-Current

Retained-Neutral Polarized Line Relay

Size 6

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
68	Screw, No. 10-32 x 5/8" fil. hd., for fastening cores to cover	12280–10
69	Pin, 1/8" dia. x 3/4" lg., for fastening cores to cover	1478–1
70	Screw, No. 10-32, with lock washer, for fastening bearing Fig. 74 to pole	373–2 53029–3
71	Screw, No. 10-32 x 9/16" hex. hd., with hex. nut and lock washer, for fastening arm Fig. 79 to polarized structure	21839–2 577–12 22543–9
72	Filler Block, for cover	45211–6
73	Polarized Armature Complete, for relay	39043–21 Gr. 5
74	Bearing, for armature	53025–4
75	Nut, No. 14-24 x 1/8" hex., for trunnion	42839–8
76	Lock Washer, for nut Fig. 75	1601–42
77	Trunnion, for polarized armature	29545–13
78	Screw, No. 10-32 x 7/8" rd. hd., with hex. nut, for fastening arm to polarized structure	373–3 577–12
79	Arm Complete, for supporting block Fig. 63	56854 Gr. 1
80	Nut, No. 10-32 x 5/8" hex., for screw Fig. 84	577–14
81	Neutral Armature Complete, includes brackets for trunnions riveted in place	29524–9 Gr. 2
82	Trunnion, headless, for armature	35269–3
83	Lock Washer, for nut Fig. 61	1601–37
84	Screw, No. 10-32 x 2 1/2" sq. hd., for fastening armature to cover	351–16
85	Trunnion, as shown, for armature	35269–4
86	Screw, No. 8-32 x 3/8" hex. hd., with lock washer, for bracket on armature	29525–7 53029–21
87	Bracket, for supporting armature	53016–1
88	Escutcheon Pin, No. 16 x 1/2", for trunnion	0677–2
89	Screw, No. 10-32, headless, for spring Fig. 90	20360–2
90	Spring, for armature	16111–90

(*Continued on following page*)

Type K Direct-Current

Retained-Neutral Polarized Line Relay

Size 6

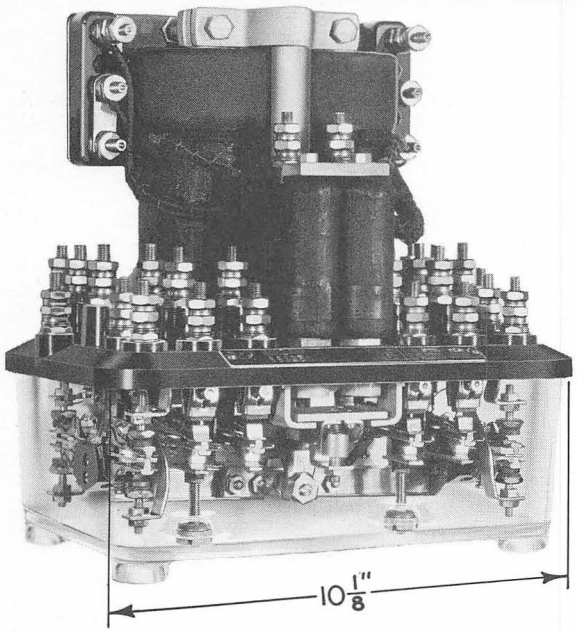
Drawing references are shown for convenience in checking shipping lists and invoices.

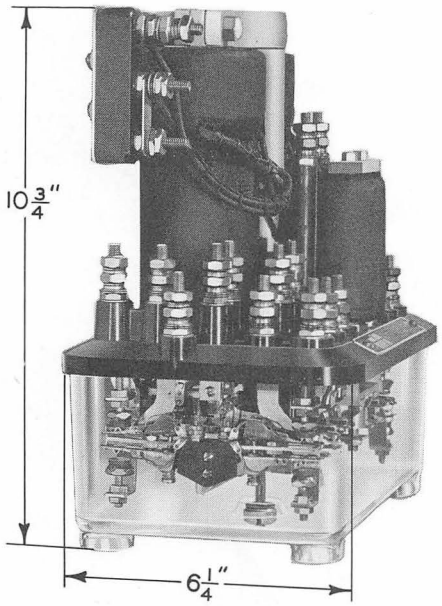
Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
91	Lock Washer, for terminal posts	53029–22
92	Washer, steel, for nut Fig. 20	50587–1
93	Screw, No. 10-32 x ½″ rd. hd., with lock washer, for armature	3044–9 53029–3
94	Plate, for reinforcing fingers Figs. 62 and 64	55911–22
95	Screw, No. 6-32 x ¾″ fil. hd., with three hex. nuts and three washers, for fastening fingers to block Fig. 63	367–1 37404–1 2534–1
96	Lock Washer, for screws Fig. 55	22543–14
97	Fibre Washer, for use between spring washer Fig. 6 and coil	34017–5
98	Screw, No. 4-36, fl. fil. hd., for fastening retaining armature to supports	37696–4

Memoranda

Memoranda

PLATE E2257





Type K, Direct-Current
Retained-Neutral, Polarized Track Relay
Size Eight

April 1952 GENERAL RAILWAY SIGNAL COMPANY

Type K Direct-Current

Retained-Neutral Polarized Track Relay

Size 8-4FB and 4NR

NOTE: This relay is always furnished with four dependent front and back neutral contacts and four dependent normal and reverse polarized contacts.

Neutral contacts are silver-impregnated carbon to silver front and silver to silver back.

Polarized contacts are silver-impregnated carbon to silver.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.

For mounting centers see Plate E2349.

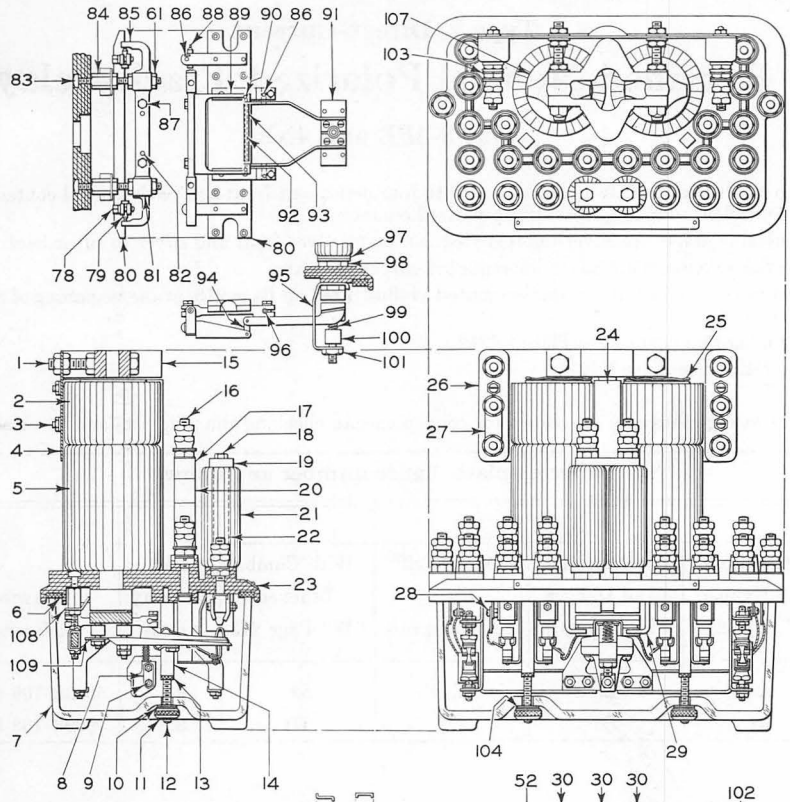
For details see Plate E2259.

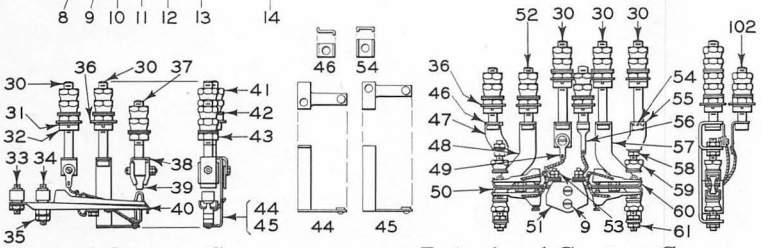
Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.				Res. of Relay Ohms	Drawing Reference
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213		
A	B	C	D	2	53002–108 Gr. 2
A1	B1	C1	D1	3.88	53002–108 Gr. 3

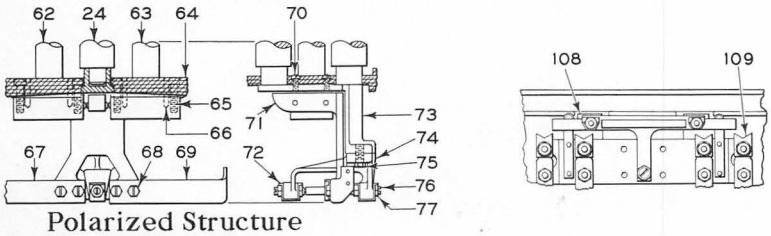
PLATE E2259





Neutral Contact Group

Polarized Contact Group



Polarized Structure

Type K, Direct-Current
Retained-Neutral, Polarized Track Relay
Size Eight

Type K Direct-Current

Retained-Neutral Polarized Track Relay

Size 8

For mounting brackets see Plate E2349.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
1	Screw, $\frac{5}{16}$"-18 x $2\frac{3}{8}$" hex. hd., with hex. nuts, for fastening yokes to cores, also for supporting plate Fig. 4	3440–18 29954
2	Coil, upper, for relay, specify resistance	
3	Screw, No. 10-32 x $\frac{13}{16}$" rd. hd., with hex. nut and lock washer, for fastening terminal block to plate Fig. 4	361–3 577–12 53029–3
4	Plate, for supporting terminal blocks	51168–20
5	Coil, lower, for relay, specify resistance	
6	Gasket, rubber, for glass case	13014–236
7	Glass Case, for housing relay contacts	37380–5
8	Lock Washer, for screw Fig. 9	22543–14
9	Screw, No. 6-32 x $\frac{3}{4}$" fil. hd., with hex. nut, for fastening block Fig. 51 to arms Figs. 67 and 69	367–1 37404–1
10	Washer, rubber, for use next to glass case, requires washer Fig. 104	1333–12
11	Knurled Nut, No. 14-24 with spring, for screw Fig. 12	846–8 786–150
12	Screw, No. 14-24 x $3\frac{3}{4}$" sq. hd., for fastening glass case to relay cover	48565–22
13	Knurled Nut, No. 14-24 x $\frac{3}{32}$" rd., for screw Fig. 12	35281–4
14	Insulating Bushing, for screw Fig. 12	35282–2
15	Yoke, for relay	42836–38
16	Terminal Post, No. 14-24 x 5" sq. hd., for relay	350–17
17	Bushing, $\frac{9}{16}$" lg., for terminal post Fig. 16	7350–109
18	Screw, No. 10-32 x $\frac{9}{16}$" lg , for fastening yoke Fig. 19 to core Fig. 22	13006–16
19	Yoke, for core, Fig. 22	42836–22
20	Bushing, $\frac{11}{16}$" lg., for terminal post Fig. 16	7350–29
21	Coil, for relay, specify resistance	
22	Core, for coil Fig. 21	29514–55

(*Continued on following page*)

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Retained-Neutral Polarized Track Relay

Size 8

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
23	Name Plate, with drive screws, for relay	401–165 54392–1
24	Permanent Magnet, for relay	53007–3
25	Spring Washer, for top of coils	36177–2
26	Terminal Block Complete, with three terminal posts	46048–18 Gr. 1
27	Connector, for terminal block	4906–97
28	Terminal, short, with screw, nut and lock washer, for contact finger connectors	51559–39 3931–6 3614–1 53029–26
29	Pole Piece, for armature	55071–1
30	Terminal Post, No. 14-24 x $2\frac{7}{16}$″ sq. hd., for relay	350–9
31	Lead Washer, for terminal posts	1533–41
32	Spanner Nut, No. 14-24, for terminal posts	42840–5
33	Insulator Complete, short, for fastening neutral finger to armature	42792–10
34	Insulator Complete, long, for fastening neutral finger to armature	42792–12
35	Nut, No. 10-32 x $\frac{1}{8}$″ hex., with lock washer, for screws on insulators	577–12 53029–3
36	Washer, for terminal posts	45736–2
37	Terminal Post, No. 14-24, for front contacts	38275–12
38	Holder, for front contact, includes screw and nuts	53018 53018–1 367–1 37404–1
39	Front Contact, silver-impregnated carbon	13026–26
40	Finger Complete, articulated, has silver front and back contacts, for details and order references see Plate E2345 Fig. A	53011–41 Gr. 1
41	Nut, No. 14-24 x $\frac{5}{16}$″ hex., for terminal posts	42843–1
42	Washer, for terminal posts	1225–2

(Continued on following page)

Type K Direct-Current

Retained-Neutral Polarized Track Relay

Size 8

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
43	Nut, No. 14-24 x 1/8" hex., for terminal posts	46989-2
44	Back Contact Support Complete, left hand, has silver contact	51320-5 Gr. 2
45	Back Contact Support Complete, right hand, has silver contact	51320-5 Gr. 1
46	Lock Washer, for terminal post	1601-53
47	Support, short, right hand, for contact Fig. 59	35921-28
48	Support, long, right hand, for contact Fig. 59	35921-22
49	Connector Complete, short, for polarized fingers	42760-1 Gr. 6
50	Finger Complete, right hand, articulated, has silver contacts, for details and order references see Plate E2345 Fig. H	53011-22 Gr. 2
51	Block, for supporting fingers Figs. 50 and 60	47508-47
52	Terminal Post, No. 14-24 x 1 7/8" sq. hd., for relay	350-6
53	Screw, No. 6-32 x 3/4" fil. hd., with three hex. nuts and three washers, for fastening fingers Figs. 50 and 60 to block Fig. 51	367-1 37404-1 2534-1
54	Lock Washer, for terminal post	1225-75
55	Support, short, left hand, for contact Fig. 59	35921-27
56	Connector Complete, long, for polarized fingers	42760-23 Gr. 4
57	Support, long, left hand, for contact Fig. 59	35921-23
58	Lock Washer, for nut Fig. 61	53029-3
59	Contact Complete, silver-impregnated carbon, for polarized contact group	42799-7 Gr. 13
60	Finger Complete, left hand, articulated, has silver contacts, for details and order references see Plate E2345 Fig. G	53011-22 Gr. 1
61	Nut, No. 10-32 x 1/8" hex., for contacts Fig. 59, also for screws Fig. 83	577-12
62	Core Complete, as shown, with residual pins	29516-10 Gr. 2
63	Core Complete, as shown, with residual pins	29516-10 Gr. 1
64	Cover, for relay	29511-52
65	Screw, No. 10-32 x 5/8" fil. hd., for fastening cores to cover	12280-10
66	Pin, 1/8" x 3/4", for locking cores to cover	1478-1

(Continued on following page)

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Retained-Neutral Polarized Track Relay

Size 8

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
67	Arm, right hand, for supporting block Fig. 51	53014–1
68	Screw, No. 10-32 x 7/16″ hex. hd., with hex. nut and lock washer, for fastening arms Figs. 67 and 69 to polarized structure	21839–2 577–12 22543–9
69	Arm, left hand, for supporting block Fig. 51	53014
70	Screw, No. 8-32 x 3/8″ rd. hd., with lock washer, for fastening permanent pole to cover	2430–29 43058
71	Polarized Armature Complete, for relay	39043–4 Gr. 3
72	Lock Washer, for nut Fig. 77	1601–42
73	Permanent Pole, as shown, for polarized structure	53024
74	Bearing, for polarized armature	53025
75	Screw, No. 10-32 x 5/8″ hex. hd., with lock washer, for fastening bearing to pole	13006–47 0622
76	Trunnion, for polarized armature	29545–13
77	Nut, No. 14-24 x 1/8″ hex., for trunnion	42839–8
78	Screw, No. 8-32 x 3/8″ hex. hd., with lock washer, for bracket on armature	29525–7 53029–21
79	Trunnion, as shown, for armature	35269–4
80	Neutral Armature Complete. Includes residual pins and brackets for trunnions riveted in place	29524–52 Gr. 1
81	Lock Washer, for nut Fig. 61	1601–37
82	Pin, No. 000 split taper, for fastening bracket Fig. 89 to armature bracket Fig. 85	34891
83	Screw, No. 10-32 x 2½″ sq. hd., for fastening neutral armature to relay cover	351–16
84	Nut, No. 10-32 hex., for screw Fig. 83	577–14
85	Bracket, for supporting neutral armature	53016–11
86	Escutcheon Pin, No. 16 x ½″, for trunnion	0677–2

(*Continued on following page*)

Type K Direct-Current

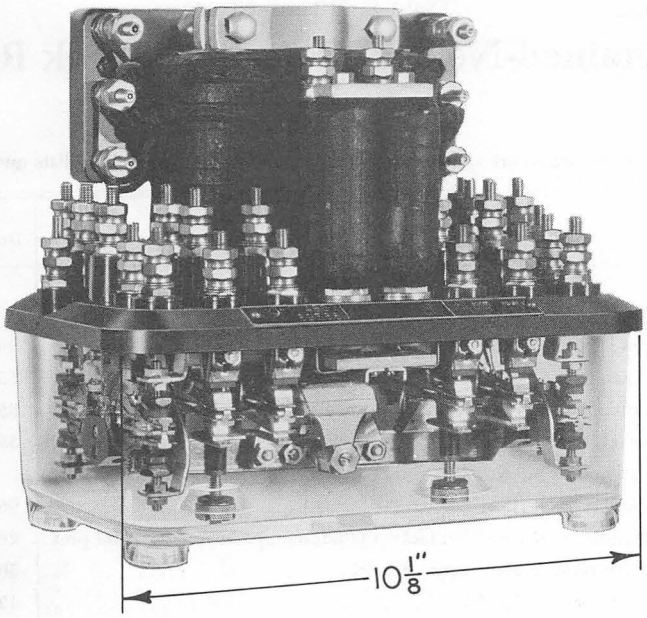
Retained-Neutral Polarized Track Relay

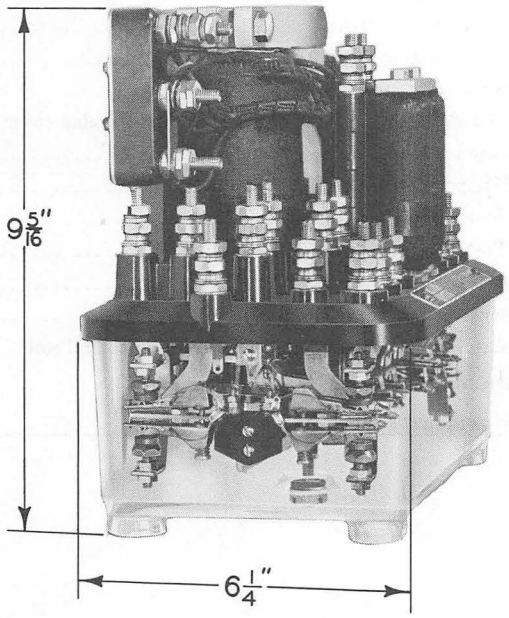
Size 8

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
87	Screw, No. 8-32 x ½″ hex. hd., with lock washer, for fastening bracket Fig. 89 to bracket Fig. 85	29526–1 53029–21
88	Trunnion, as shown, headless, for armature	35269–3
89	Bracket, for supporting retaining armature	55635
90	Escutcheon Pin, No. 18 x ⅜″, for securing pin Fig. 92 to bracket Fig. 89	0686
91	Retaining Armature Complete, includes supports and residual pins	29524–19 Gr. 1
92	Pin, for retaining armature Fig. 91	504–260
93	Spacer, for pin Fig. 92	49655–124
94	Link, for connecting bracket Fig. 89 to retaining armature Fig. 91	40452–23
95	Support, for screw Fig. 100	55636
96	Trunnion, for retaining armature Fig. 91	35269–10
97	Felt Washer, for use under coil Fig. 21	21119
98	Nut, ½″-13 x $\frac{5}{32}$″ hex., for fastening core Fig. 22 to relay cover	6358–5
99	Spring, as shown, for screw Fig. 100	51055–6
100	Screw, for supporting spring Fig. 99	55637
101	Nut, No. 14-40 x ⅛″ hex., for screw Fig. 100	53084–1
102	Terminal Post, No. 14-24 x 1⅝″ sq. hd., for relay	350–4
103	Lock Washer, for terminal posts	53029–22
104	Washer, steel, for nut Fig. 11	50587–1
107	Fibre Washer, for use between spring washer Fig. 25 and coil	34017–5
108	Plate, connector, two required	18053
109	Plate, relief gap, four required	18052

PLATE E2267





Type K, Direct-Current
Retained-Neutral, Polarized Line Relay
Size Eight

April 1952 GENERAL RAILWAY SIGNAL COMPANY

Type K Direct-Current

Retained-Neutral Polarized Line Relay

Size 8-4FB and 4NR

NOTE: This relay is always furnished with four dependent front and back neutral contacts and four normal and reverse dependent polarized contacts.

Neutral contacts are silver-impregnated carbon to silver front and silver to silver back.

Polarized contacts are silver-impregnated carbon to silver.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.

For mounting centers see Plate E2349.

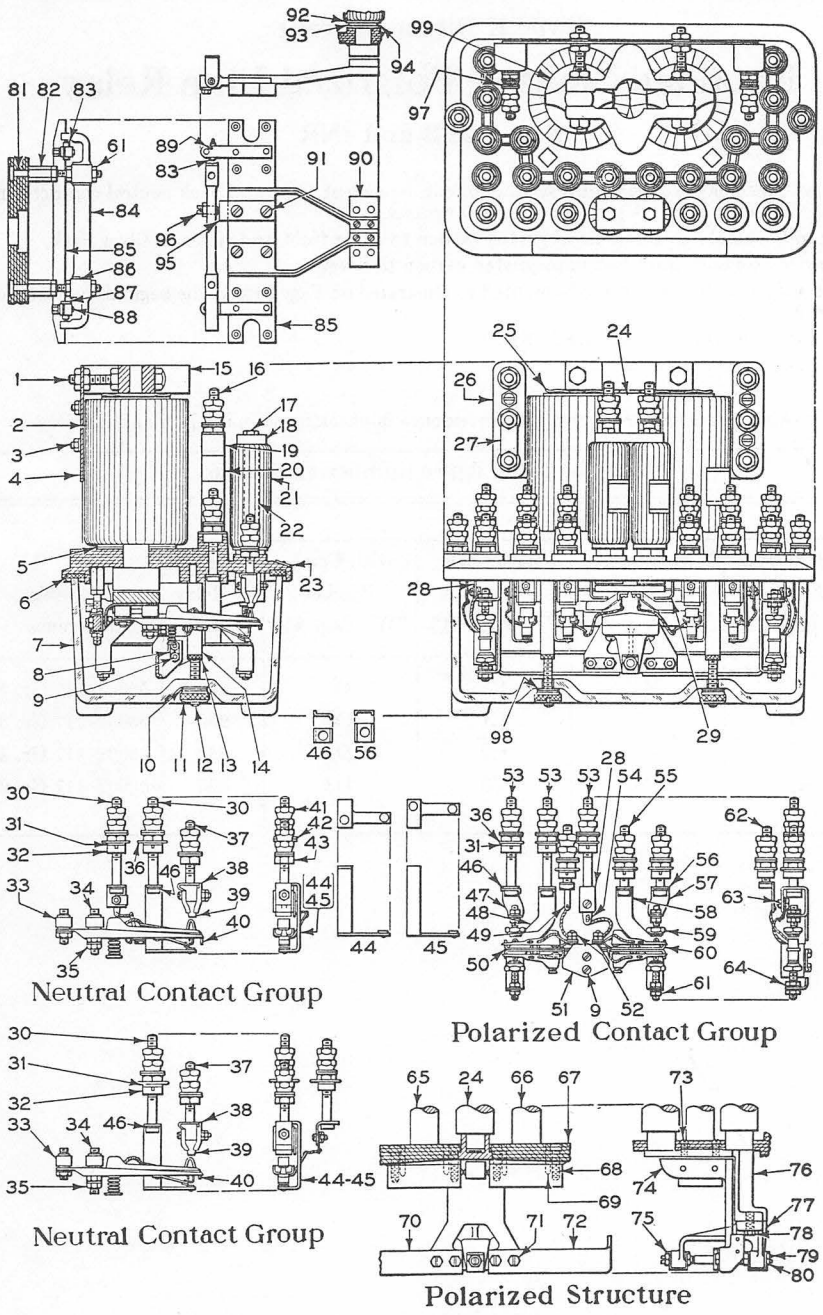
For details see Plate E2269.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.				Res. of Relay Ohms	Drawing Reference
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213		
A	B	C	D	100	53002–117 Gr. 5
A1	B1	C1	D1	200	53002–117 Gr. 3
A2	B2	C2	D2	320	53002–117 Gr. 4
A3	B3	C3	D3	480	53002–117 Gr. 2

PLATE E2269



Type K, Direct-Current
Retained-Neutral, Polarized Line Relay
Size Eight

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Type K Direct-Current

Retained-Neutral Polarized Line Relay

Size 8

For mounting brackets see Plate E2349.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
1	Screw, $\frac{5}{16}$″-18 x $2\frac{3}{8}$″ hex. hd., with hex. nuts, for fastening yokes to cores, also for supporting plate Fig. 4	3440–18 29954
2	Coil, for relay, specify resistance	
3	Screw, No. 10-32 x $\frac{13}{16}$″ rd. hd., with hex. nut and lock washer, for fastening terminal block to plate Fig. 4	361–3 577–12 53029–3
4	Plate, for supporting terminal blocks	51168–20
5	Felt Washer, for use between coils and cover	1533–10
6	Gasket, rubber, for glass case	13014–236
7	Glass Case, for housing relay contacts	37380–5
8	Lock Washer, for screw Fig. 9	22543–14
9	Screw, No. 6-32 x $\frac{3}{4}$″ fil. hd., with hex. nut, for fastening arms Figs. 70 and 72 to block Fig. 51	367–1 37404–1
10	Washer, rubber, for use next to glass case, requires washer Fig. 98	1333–12
11	Knurled Nut, No. 14-24, with spring, for screw Fig. 12	846–8 786–150
12	Screw, No. 14-24 x $3\frac{3}{4}$″ sq. hd., for fastening glass case to relay cover	48565–22
13	Knurled Nut, No. 14-24 x $\frac{3}{32}$″ rd., for screw Fig. 12	35281–4
14	Insulating Bushing, for screw Fig. 12	35282–2
15	Yoke, for relay	42836–38
16	Terminal Post, No. 14-24 x 5″ sq. hd., for relay	350–17
17	Screw, No. 10-32 x $\frac{9}{16}$″ lg., for fastening yoke Fig. 18 to core Fig. 22	13006–16
18	Yoke, for core Fig. 22	42836–22
19	Bushing, $\frac{9}{16}$″ lg., for terminal post Fig. 16	7350–109
20	Bushing, $\frac{11}{16}$″ lg., for terminal post Fig. 16	7350–29
21	Coil, for relay, specify resistance	

(*Continued on following page*)

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Type K Direct-Current

Retained-Neutral Polarized Line Relay

Size 8

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
22	Core, for coil Fig. 21	29514–55
23	Name Plate, with drive screws for relay	401–165 54392–1
24	Permanent Magnet, for relay	53007
25	Spring Washer, for top of coils	36177–2
26	Terminal Block Complete, with three terminal posts	46048–18 Gr. 1
27	Connector, for terminal posts	4906–97
28	Terminal, short, for contact finger connections	51559–39
29	Back Stop, for retaining armature	55068
30	Terminal Post, No. 14-24 x $2\frac{7}{16}$″ sq. hd., for relay	350–9
31	Lead Washer, for terminal posts	1533–41
32	Spanner Nut, No. 14-24, for terminal posts	42840–5
33	Insulator Complete, short, for fastening neutral finger to armature	42792–10
34	Insulator Complete, long, for fastening neutral finger to armature	42792–12
35	Nut, No. 10-32 x $\frac{1}{8}$″ hex., with lock washer, for screws on insulators	577–12 53029–3
36	Washer, for terminal posts	45736–2
37	Terminal Post, No. 14-24, used as front contacts	38275–12
38	Holder, for front contact, includes screw and nuts	53018 53018–1 367–1 37404–1
39	Front Contact, silver-impregnated carbon, for relay	13026–26
40	Finger Complete, articulated, has silver front and back contacts, for details and order references see Plate E2345 Fig. A	53011–41 Gr. 1
41	Nut, No. 14-24 x $\frac{5}{16}$″ hex., for terminal posts	42843–1
42	Washer, for terminal posts	1225–2
43	Nut, No. 14-24 x $\frac{1}{8}$″ hex., for terminal posts	46989–2
44	Back Contact Support Complete, left hand, has silver contact	51320–5 Gr. 2

(Continued on following page)

Type K Direct-Current

Retained-Neutral Polarized Line Relay

Size 8

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
45	Back Contact Support Complete, right hand, has silver contact	51320–5 Gr. 1
46	Lock Washer, as shown, for terminal post	1225–75
47	Support, short, left hand, for contact Fig. 59	35921–27
48	Support, long, left hand, for contact Fig. 59	35921–23
49	Connector Complete, long, for polarized fingers	42760–23 Gr. 4
50	Finger Complete, right hand, articulated, has silver contacts, for details and order references see Plate E2345, Fig. H	53011–22 Gr. 2
51	Block, for supporting fingers Figs. 50 and 60	47508–47
52	Screw, No. 6-32 x $\frac{3}{4}$″ fil. hd., with three hex. nuts and three washers, for fastening fingers Figs. 50 and 60 to block Fig. 51	367–1 37404–1 2534–1
53	Terminal Post, No. 14-24 x $2\frac{7}{16}$″ sq. hd., for relay	350–9
54	Connector Complete, short, for polarized fingers	42760–1 Gr. 6
55	Terminal Post, No. 14-24 x $1\frac{7}{8}$″ sq. hd., for relay	350–6
56	Lock Washer, as shown, for use on terminal posts	1601–53
57	Support, short, right hand, for contact Fig. 59	35921–28
58	Support, long, right hand, for contact Fig. 59	35921–22
59	Contact Complete, silver-impregnated carbon, for polarized contact group	42799–7 Gr. 13
60	Finger Complete, left hand, articulated, has silver contacts, for details and order references see Plate E2345 Fig. G	53011–22 Gr. 1
61	Nut, No. 10-32 x $\frac{1}{8}$″ hex., for contact Fig. 59, also for screws Fig. 81	577–12
62	Terminal Post, No. 14-24 x $1\frac{5}{8}$″ sq. hd., for relay	350–4
63	Screw, No. 6-32 x $\frac{1}{4}$″ fil. hd., with hex. nut and washer, for connector Fig. 54	3931–6 3614–1 53029–26
64	Lock Washer, for contact Fig. 59	53029–3
65	Core Complete, as shown, with residual pins	29516–10 Gr. 4

(Continued on following page)

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Type K Direct-Current

Retained-Neutral Polarized Line Relay

Size 8

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
66	Core Complete, as shown, with residual pins	29516–10 Gr. 3
67	Cover, for relay	29511–52
68	Screw, No. 10-32 x 5/8″ fil. hd., for fastening cores to cover	12280–10
69	Pin, 1/8″ x 3/4″, for locking cores to cover	1478–1
70	Arm, right hand, for supporting block Fig. 51	53014–1
71	Screw, No. 10-32 x 7/16″ rd. hd., with hex. nut and lock washer, for fastening arms Figs. 70 and 72 to polarized structure	21839–2 577–12 22543–9
72	Arm, left hand, for supporting block Fig. 51	53014
73	Screw, No. 8-32 x 3/8″ rd. hd., with lock washer, for fastening permanent pole to cover	2430–29 43058
74	Polarized Armature Complete, for relay	39043–4 Gr. 3
75	Lock Washer, for nut Fig. 80	1601–42
76	Permanent Pole, as shown, for polarized structure	53024
77	Bearing, for polarized armature	53025
78	Screw, No. 10-32 x 5/8″ hex. hd., with lock washer, for fastening bearing to pole	13006–47 0622
79	Trunnion, for polarized armature	29545–13
80	Nut, No. 14-24 x 1/8″ hex., for trunnion	42839–8
81	Screw, No. 10-32 x 3 1/2″ sq. hd., for fastening neutral armature bracket to relay cover	351–16
82	Spacer Nut, No. 10-32 hex., for screw Fig. 81	577–14
83	Trunnion, as shown, headless, for armature	35269–3
84	Bracket, for supporting neutral armature	53016–5
85	Neutral Armature Complete. Includes residual pins and brackets for trunnions riveted in place	29524–9 Gr. 2
86	Lock Washer, for nut Fig. 61	1601–37
87	Trunnion, as shown, for armature	35269–4

(Continued on following page)

Type K Direct-Current

Retained-Neutral Polarized Line Relay

Size 8

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
88	Screw, No. 8-32 x 3/8" hex. hd., with lock washer, for bracket on armature	29525–7 53029–21
89	Escutcheon Pin, No. 16 x 1/2" for trunnion	0677–2
90	Retaining Armature Complete, includes supports and residual pins	29524–19 Gr. 1
91	Screw, No. 10-32 x 5/16" fil. hd., with lock washer, for fastening retaining armature Fig. 90 to neutral armature	53348–1 53029–3
92	Felt Washer, for use under coil Fig. 21	21119
93	Nut, 1/2"-32 x 5/32" hex.,for fastening core Fig. 22 to relay cover	6358–5
94	Washer, for use under nut Fig. 93	1225–33
95	Spring, for armature	16111–90
96	Screw, No. 14-24, headless, for spring Fig. 95	20360–2
97	Lock Washer, for terminal posts	53029–22
98	Washer, steel, for nut Fig. 11	50587–1
99	Fibre Washer, for use between spring washer Fig. 25 and coil	34017–5

Memoranda

Section E, Part 21

Type K Tractive-Armature Direct-Current Neutral Relays

Supersedes Section E, Part 21, dated July 1949

General Railway Signal Company
Printed in U. S. A.

Type K, Tractive-Armature Direct-Current Neutral Relays

Foreword and Ordering Information

Modern research and development have made available better materials, better design, improved processes and methods of production in which every operation entering into the manufacture of direct-current relays is controlled between close limits.

Type K Neutral Relays may be supplied to meet many varied and unusual conditions in track or line applications requiring slow pickup, slow release, quick pickup, or quick release.

Track Relays—Time of Operation

The drop away or shunting time of a track relay is determined by the amount of current passing through the relay which in turn, is dependent upon ballast resistance, shunting resistance and other variable elements. Although it is possible to increase or decrease the time of pickup or shunt by altering the construction of the relay, efficiency is sacrificed in so doing and there are limits beyond which it is not desirable to go. If reduction in time of shunting is required or if slow pickup is desired same should be taken up by letter giving complete information as to condition of operation.

The Size 2 Type K Relay exceeds the 5 inch-ounce A.A.R. requirement for armature torque and is particularly designed for use in track circuits where quick shunting is required.

The Size 4 Relay has an exceedingly high armature torque of 18 inch-ounces as compared to A.A.R. Specification requiring 5 inch-ounces. The Size 6 and 8 Relays have correspondingly higher armature torque.

Line Relays—Time of Operation

Due to the extensive use of slow releasing line relays, we have listed both regular releasing and slow-releasing relays in the following pages. Where current is cut off, as in regular line applications, the release of a regular releasing relay is practically instantaneous.

We are prepared to furnish special slow pickup and slow release relays which have special features permitting longer pickup and release time than can be attained in our standard relays.

Contacts

To obtain a contact material which could be used for both 1st and 2nd Range A.A.R Voltages, a material with the characteristics of carbon for taking the arc when a circuit is broken and with the low resistance characteristics of silver for carrying the current has long been the aim of relay builders. That material has been obtained and is now used in our universal contact combinations which are supplied on all Type K Relays.

Contact resistance in our Type K Relays is well under A.A.R. Specifications and remains unusually low and uniform under the most severe operating conditions.

Type K Relays may be equipped with regular, heavy-duty, or extra-heavy-duty contacts and a brief description of each follows:

Regular Contacts for First-Range Voltages (30 volts or less)

Regular front and back contacts, Fig. A, Plate E2345, are supplied with Type K Relays intended for regular duty. They are designed to carry 4 amperes continuously, as required by A.A.R. specifications.

The front contact is silver to silver-impregnated carbon; the back contact is silver to silver. The initial cleaned contact resistance is below the A.A.R. value of 0.09 ohm maximum for the front contact; 0.03 ohm maximum for the back contact.

The minimum front contact opening is 0.050 inch and with the front contact just closed the minimum back contact opening is 0.020 inch.

The flexible connector connecting the binding post and the contact finger is for regular duty and will carry 10 amperes continuously without injury.

Heavy-Duty (HD) Contacts for First-Range Voltages (30 volts or less)

Heavy-duty contacts were designed to carry and interrupt loads that would ordinarily cause excessive erosion of regular duty contacts. This increased capacity is obtained by means of greater contact area as well as increased weight of the contacts. However the life of any contact is determined by the character and voltage of the load as well as by the current interrupted and the frequency of interruption. In order to prolong the life of the contact the load should be divided between the available contacts where possible. If this cannot be done the contacts should be used in multiple.

Type K neutral relays, Sizes 2, 4, 6, and 8 are furnished with HD contacts in two standard combinations as follows:

(a) heavy-duty front, regular back, Fig. U, Plate E2345.

(b) heavy-duty front and back, Fig. V, Plate E2345.

The front contact is silver to silver-impregnated carbon; the back contact is silver to silver. Contact resistance is the same as regular contacts for first-range a-c. and d-c. voltages. However, the contact opening may be .050″, .090″ or .125″ as specified, depending upon the characteristics of the circuit. All fingers carrying HD contacts are provided with heavy-duty flexible connectors.

Extra-Heavy-Duty (EHD) Contacts for Second-Range Voltages (Over 30 volts to and including 175 volts)

To handle heavy direct-current loads in second-range voltages Type K relays are now available equipped with extra-heavy-duty (EHD) front contacts.

EHD contacts are heavy-duty front contacts with a magnetic blowout device that extinguished the arc instantly. Tests prove that Type K relays with EHD front contacts can safely interrupt 50 amperes surge in a highly inductive 110-volt d-c. circuit.

EHD contacts, it is found, work best at voltages above the first range; hence they are recommended for second-range use only, especially for cutting power to 110-volt switch machines, 110-volt motor-driven and solenoid signals, and crossing gate mechanisms.

The resistance of EHD contacts is the same as that of the HD contacts. Front contact opening is 0.125 inch. The operating values of a relay equipped with EHD contacts are the same as those of a regular relay having the same front contact opening.

All EHD contacts are provided with heavy-duty flexible connectors.

All relays have articulated contact fingers using ball pivot construction which permits the contact to find its seat accurately, insuring equal pressure over the whole contact area.

Relief Gap Plates

All track relays are equipped with relief gap plates.

Mounting

The Size 2 Relay is furnished with a shock absorber, as shown on Plate E2105, which permits the relay to be wall- or shelf-mounted as required.

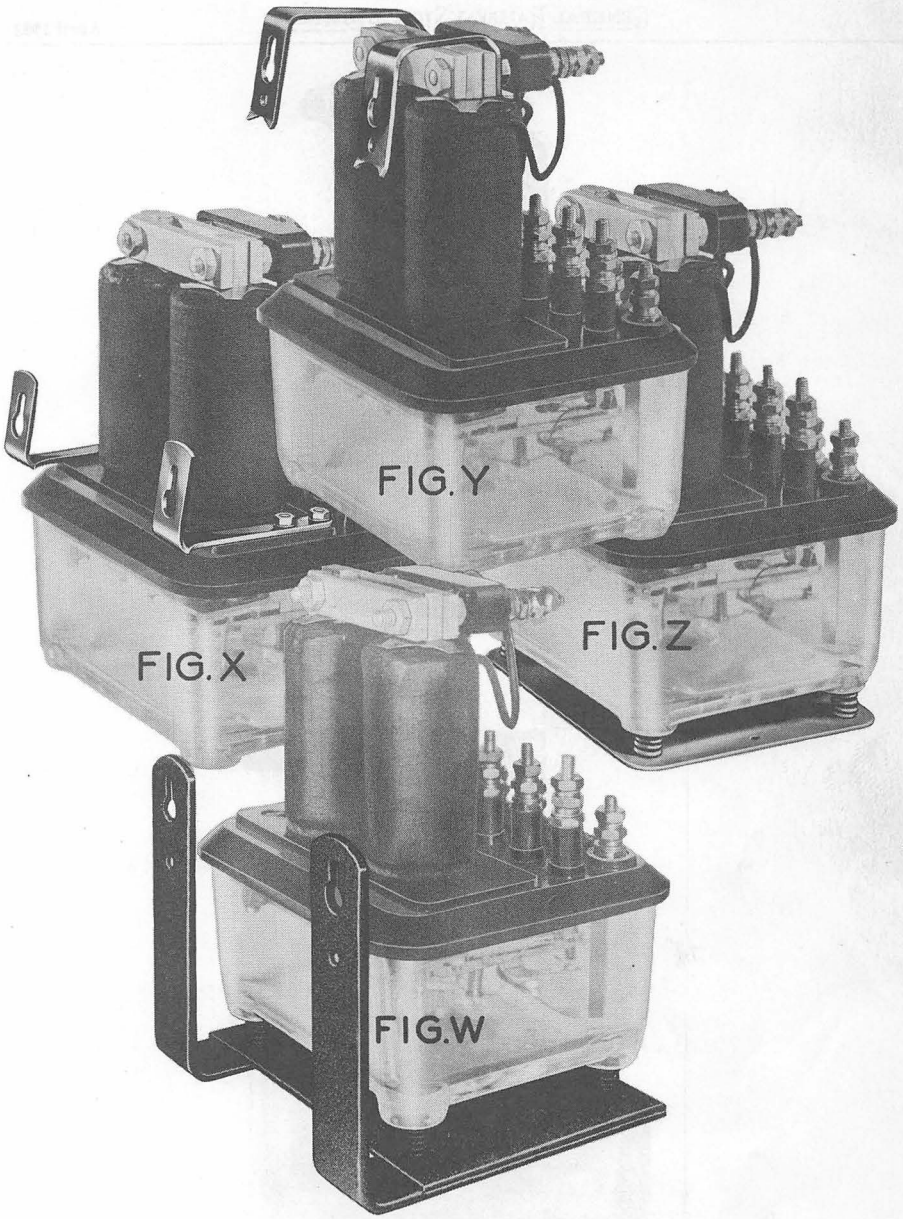
All other relays may be supplied with the following shock absorber for mounting except biased-neutrals which can only use Figs. W or Z:

1. Fig. X which shows the spring type wall hanger.
2. Fig. Y which shows a resilient type wall hanger which is fastened to the top of the relay by the bolts that hold the yokes to the cores. This hanger provides better spring mounting and also eliminates the need for the auxiliary springs as shown on Plate E2349, Figs. 9, 10, 11, and 12.
3. Fig. Z which shows the shelf mounting plate.
4. Fig. W which shows a combination wall- and shelf-mounting bracket.

The ordering references for all relays, except the Size 2 Neutral, have been so arranged that the customers can readily order a relay with the desired shock absorber.

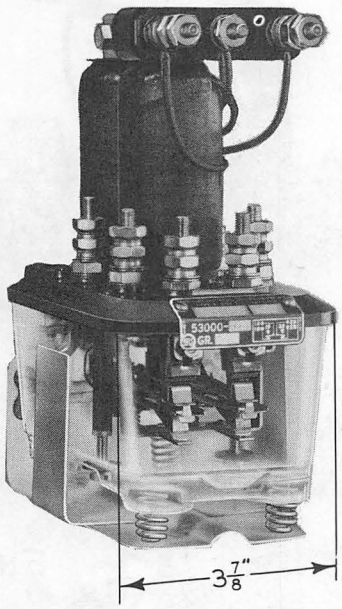
The mounting centers for the various relays are shown in a table on Plate E2349.

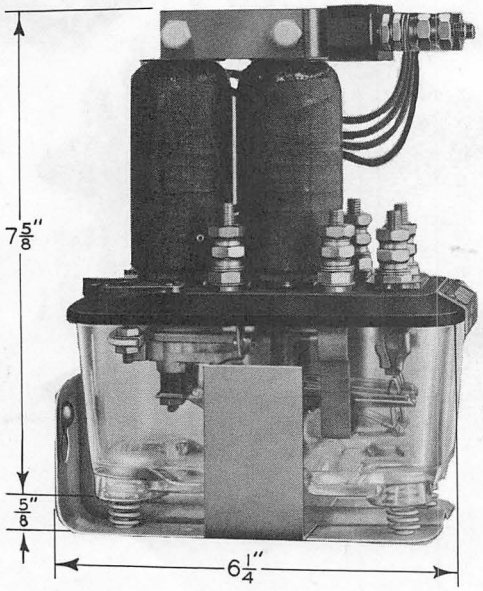
All Type K Relays meet the latest A.A.R. Specifications in every respect.



Mounting Methods

GENERAL RAILWAY SIGNAL COMPANY April 1952





Type K, Direct-Current, Neutral Relay
Size Two

Type K Direct-Current

Regular Releasing Neutral Relay

Size 2-2FB

NOTE: This relay is always furnished with two dependent front and back contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

This relay is always furnished with a shock absorber which permits the relay to be wall- or shelf-mounted.

For details see Plate E2106.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Resistance of Relay—Ohms	Drawing Reference
A	No Coils	53000–122 Gr. 1
A1	2	53000–122 Gr. 2
A2	3	53000–122 Gr. 3
A3	4	53000–122 Gr. 4
A4	7	53000–122 Gr. 5
A5	9	53000–122 Gr. 6
A6	11	53000–122 Gr. 7
A7	16	53000–122 Gr. 8
A8	25	53000–122 Gr. 9
A9	40	53000–122 Gr. 10
A10	50	53000–122 Gr. 11
A11	60	53000–122 Gr. 12
A12	100	53000–122 Gr. 13
A13	150	53000–122 Gr. 14
A14	200	53000–122 Gr. 15
A15	300	53000–122 Gr. 16
A16	400	53000–122 Gr. 17
A17	500	53000–122 Gr. 18
A18	600	53000–122 Gr. 19
A19	750	53000–122 Gr. 20
A20	800	53000–122 Gr. 21
A21	0.5	53000–122 Gr. 22
A22	1000	53000–122 Gr. 23
A23	0.1	53000–122 Gr. 25

(Continued on following page)

PLATE E2105

Type K Direct-Current

Regular Releasing Neutral Relay

Size 2-2FB

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Resistance of Relay—Ohms	Drawing Reference
A24	250	53000–122 Gr. 61
A25	450	53000–122 Gr. 63
A26	1500	53000–122 Gr. 24
A27	2000	53000–122 Gr. 60
A28	13240	53000–122 Gr. 62

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Type K Direct-Current
Slow Releasing Neutral Relay
Size 2-2FB

NOTE—This relay is always furnished with two dependent front and back contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

This relay is always furnished with a shock absorber which permits the relay to be wall- or shelf-mounted.

If relays with longer releasing time are desired, customer should so specify, giving full particulars.

For details see Plate E2106.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Resistance of Relay—Ohms	Minimum Time of Release Seconds at—Amps.	Drawing Reference
B	No Coils	.....	53000–122 Gr. 1
B1	25	.5 at .066	53000–122 Gr. 26
B2	25	.1 at .066	53000–122 Gr. 37
B3	30	.5 at .057	53000–122 Gr. 27
B4	50	.5 at .044	53000–122 Gr. 28
B5	75	.5 at .037	53000–122 Gr. 29
B6	100	.5 at .036	53000–122 Gr. 30
B7	150	.5 at .030	53000–122 Gr. 31
B8	200	.5 at .027	53000–122 Gr. 32
B9	250	.5 at .026	53000–122 Gr. 33
B10	260	.9 at .034	53000–122 Gr. 38
B11	300	.5 at .023	53000–122 Gr. 34
B12	375	.5 at .022	53000–122 Gr. 35
B13	400	.5 at .021	53000–122 Gr. 36
B14	500	.5 at .0174	53000–122 Gr. 39
B15	.051	.5 at 4.0	53000–122 Gr. 41
B16	12.5	.5 at .0856	53000–122 Gr. 40
B17	1000	.5 at .011	53000–122 Gr. 42
	Partial Slow Release		
B50	280	*.2 at .015	53000–122 Gr. 75
B51	430	*.2 at .0126	53000–122 Gr. 76
B52	620	*.2 at .011	53000–122 Gr. 77
B53	980	*.2 at .0086	53000–122 Gr. 78

*This approx. release time is based on approx. 150% of working current.

GENERAL RAILWAY SIGNAL COMPANY June 1954

Type K Direct-Current

Regular Releasing Heavy-Duty Neutral Relay

Size 2-2FB

Heavy-Duty Fronts and Backs

NOTE—This relay is always furnished with two dependent front and back contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

See page 211 at the beginning of this section for current carrying capacity of heavy-duty contacts.

Front contact opening will be .050″ unless otherwise specified.

This relay is always furnished with a shock absorber which permits the relay to be wall- or shelf-mounted.

For details see Plate E2106.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Resistance of Relay—Ohms	Drawing Reference
C	0.5	53000–151 Gr. 22
C1	2	53000–151 Gr. 2
C2	3	53000–151 Gr. 3
C3	4	53000–151 Gr. 4
C4	7	53000–151 Gr. 5
C5	9	53000–151 Gr. 6
C6	11	53000–151 Gr. 7
C7	16	53000–151 Gr. 8
C8	25	53000–151 Gr. 9
C9	40	53000–151 Gr. 10
C10	50	53000–151 Gr. 11
C11	60	53000–151 Gr. 12
C12	100	53000–151 Gr. 13
C13	150	53000–151 Gr. 14
C14	200	53000–151 Gr. 15
C15	300	53000–151 Gr. 16
C16	400	53000–151 Gr. 17
C17	500	53000–151 Gr. 18
C18	600	53000–151 Gr. 19
C19	750	53000–151 Gr. 20
C20	800	53000–151 Gr. 21
C21	1000	53000–151 Gr. 23
C22	1500	53000–151 Gr. 24

(Continued on following page)

June 1954 GENERAL RAILWAY SIGNAL COMPANY

Type K Direct-Current

Neutral Relay

Size 2-2FB

NOTE—This relay is always furnished with two dependent front and back contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

This relay, when used with rectifier 54728-23 Gr. 1 will give a longer release time than our regular Type K2 relay with a rectifier.

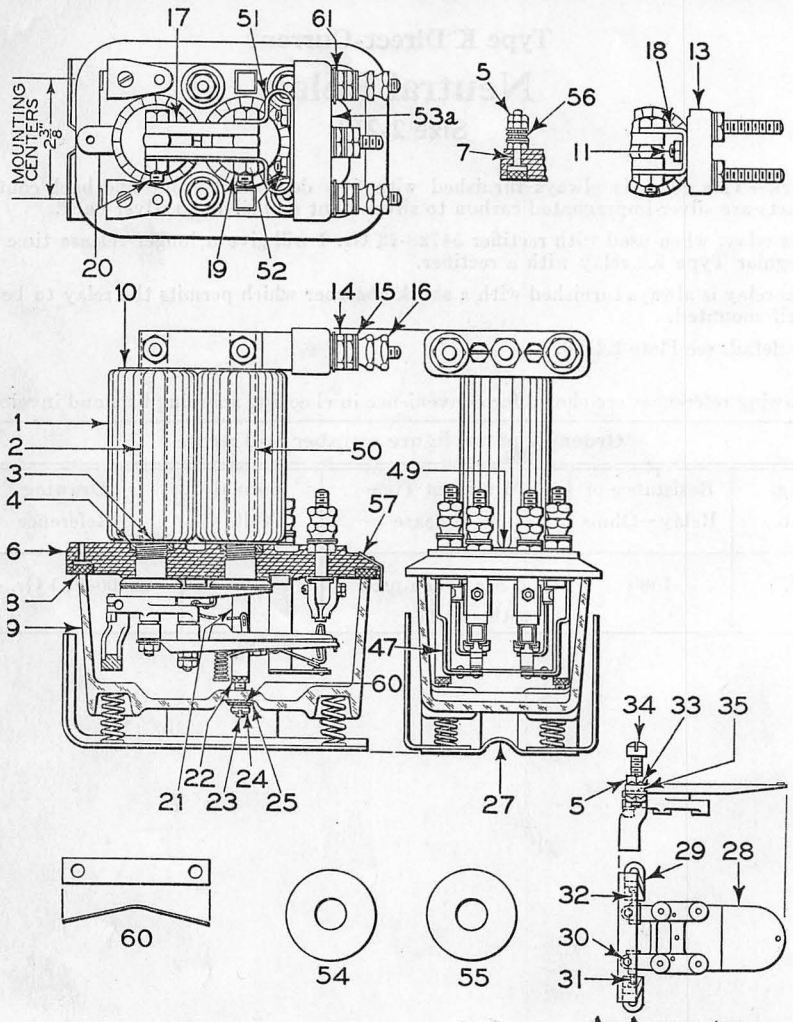
This relay is always furnished with a shock absorber which permits the relay to be wall or shelf mounted.

For details see Plate E2106.

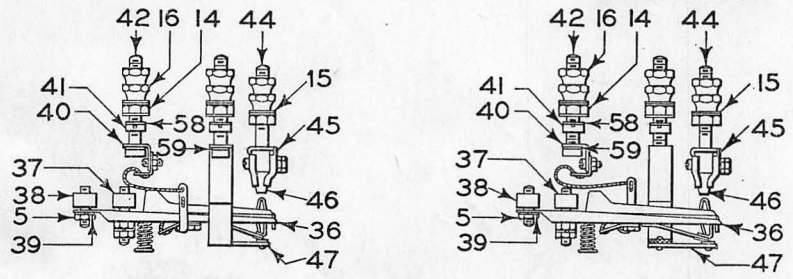
Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Resistance of Relay—Ohms	Minimum Time of Release	Normal Volts	Drawing Reference
E	1000	.6 Sec. when used with rectifier	10	53000-285 Gr. 42



A-Armature



Type K, Direct-Current, Neutral Relay
Size Two

April 1952 GENERAL RAILWAY SIGNAL COMPANY

Type K Direct-Current
Neutral Relay
Size 2

NOTE: This plate is included for ordering repair parts for all Size 2 neutral relays except special parts for the following:

Biased-Neutral,	see Plate E2163
Light-Out,	see Plate E2143
Magnetic-Blowout,	see Plate E2129
Overload,	see Plate E2159
Power-Transfer,	see Plate E2143
Primary Battery Cut-In,	see Plate E2143
Two-Rate Charge Control,	see Plate E2155

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Armature Complete, as shown, for all Size 2 regular, slow-release, light-out, magnetic-blowout, biased-neutral and approach lighting relays. (1–28, 1–29, 2–30, 1–31, 1–32 and 1–35)	42561–14 Gr. 1
1	Coil, for relay. Specify resistance and type of relay	31066
2	Core, for back coil, for all Size 2 relays except biased-neutral	29514–30
3	Washer, felt, for use under coils	1533–20
4	Lock Nut, $\frac{5}{8}$″-18, for locking cores in relay cover	18120–2
5	Nut, No. 10-32 x $\frac{1}{8}$″ hex., for screws, Figs. 7 and 34, also for screws on insulators, Figs. 37 and 38	577–12
6	Cover, for relay, for all Size 2 relays except overload, two-rate charge and biased-neutral	29511–43
7	Screw, No. 10-32 x 1″ sq. hd., used as terminal post for coils	29151–10
8	Gasket, rubber, for use between glass case and relay cover	13014–237
9	Glass Case, for housing relay mechanism	37380–16
10	Washer, for use on top of coils	34017–31
11	Screw, No. 10-32 x $\frac{1}{2}$″ fil. hd., with hex. nut and lock washer, for fastening terminal block, Fig. 13, to support Fig. 18	12563–1 577–12 53029–3
13	Terminal Block Complete, includes two terminal posts, for regular releasing, slow releasing and approach lighting relays	46048–11 Gr. 2

(*Continued on following page*)

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Direct-Current
Neutral Relay
Size 2

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
14	Nut, No. 14-24 x 1/8" hex., for terminal posts	46989–2
15	Washer, for terminal posts	1225–2
16	Nut, No. 14-24 x 5/16" hex., for terminal posts	42843–1
17	Yoke, for cores, for all Size 2 relays except two-rate charge and track approach lighting	42836–14
18	Support, for terminal block Fig. 13	53017–4
19	Nut, 1/4"-20 x 1/4" hex., for screw Fig. 20	424–2
20	Screw, 1/4"-20 x 1 1/4" hex. hd., for fastening yokes to cores	15686–1
21	Bushing, insulating, for screw Fig. 23	35282–5
22	Knurled Nut, No. 10-32 x 3/32", for screw Fig. 23	35281–5
23	Screw, No. 10-32 x 2 7/8" sq. hd., for fastening glass case to cover	29151–12
24	Nut, No. 10-32 rd., for screw Fig. 23	846–10
25	Washer, rubber, for use between spring Fig. 60 and glass case	1333–12
27	Bracket Complete, includes springs, shock absorber for relay	42819–1 Gr. 1
28	Armature, as shown, for relay	29524–13 Gr. 1
29	Bracket, for armature	53016–16
30	Screw, No. 8-32 x 5/16", fil. hd., with lock washer, for clamping armature to trunnions	870–1 53029–21
31	Trunnion, as shown, for armature	35269–4
32	Trunnion, as shown, for armature	35269–3
33	Lock Washer, for screw Fig. 34	1601–145
34	Screw, No. 10-32 x 1" fil. hd., for fastening armature to cover Fig. 6	395–1
35	Escutcheon Pin, No. 16 x 1/2", for securing bracket on armature	0677–2
36	Finger Complete, articulated, for details and order references see Plate E2345 Fig. A	53011–41 Gr. 1
37	Insulator Complete, includes long screw for fastening finger to armature	42792–12
38	Insulator Complete, includes short screw for fastening finger to armature	42792–10

(Continued on following page)

Type K Direct-Current
Neutral Relay
Size 2

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
39	Lock Washer, for screws on insulators	53029–3
40	Terminal Complete, includes screw, nut and washer	51559–79 3931–6 3614–1 53029–26
41	Spanner Nut, No. 14-24, for terminal post	42840–3
42	Terminal Post, No. 14-24 x 1¾″ sq. hd., for contact finger	350–5
44	Terminal Post, No. 14-24, for front contact	38275–12
45	Holder Complete, for front contact, includes screw and nuts	53018 53018–1 367–1 37404–1
46	Front Contact, silver-impregnated carbon, as shown	13026–26
46a	as above, except silver contact	51321–13 Gr. 2
47	Back Contact Support, consists of two supports riveted to a bakelite insulation block, for all Size 2 relays except overload	51320–40 Gr. 2
49	Shunt Strip, for slow pickup relays only	17378–13
50	Core Complete, for front coil, for all Size 2 relays except two-rate charge and biased-neutral	29516–12 Gr. 1
51	Support, for terminal blocks, Figs. 53 and 53a	53017–9
52	Screw, No. 10-32 x 13/16″ rd. hd., with hex. nut and lock washer, for fastening terminal block Fig. 53 to support Fig. 51	3044–13 577–12 53029–3
53	Terminal Block Complete, includes three terminal posts, for primary relay of primary-secondary combination	46048–10 Gr. 4
53a	as above, except with short center post, for regular releasing, slow releasing and approach lighting relays	46048–8 Gr. 4
54	Washer, copper, for slow release relays	1225–64
55	Washer, fibre, for slow release relays	493–88

(*Continued on following page*)

GENERAL RAILWAY SIGNAL COMPANY April 1952

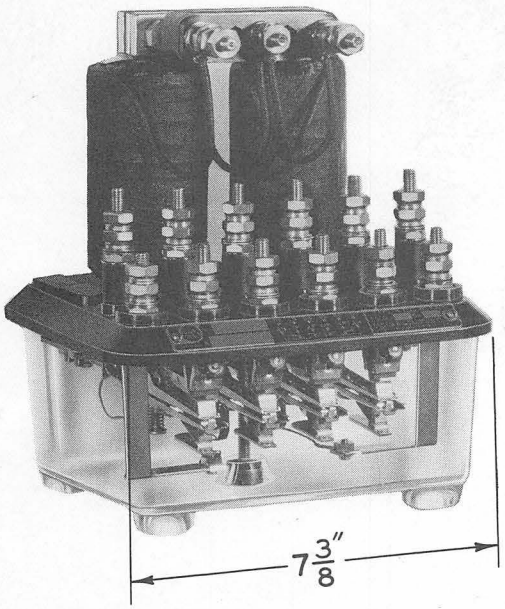
Type K Direct-Current
Neutral Relay
Size 2

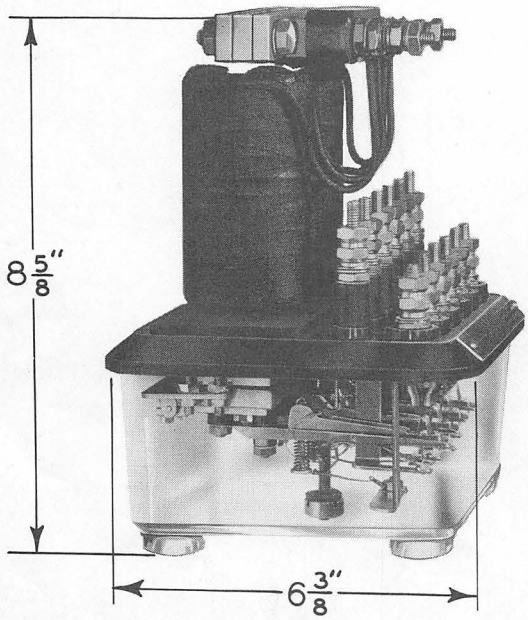
Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
56	Lock Washer, for screw Fig. 7	5046–5
57	Name Plate, with drive screws for all Size 2 relays except two-rate charge	401–138 54392–1
58	Lead Washer, for terminal posts Fig. 42	1533–33
59	Lock Washer, for terminal posts Fig. 42	1225–75
60	Spring, for nut Fig. 24, used for holding glass case to cover	16111–51
61	Lock Washer, for terminal block	53029–22

Memoranda

GENERAL RAILWAY SIGNAL COMPANY April 1952





Type K, Direct-Current, Neutral Relay
Size Four

Type K Direct-Current

Regular Releasing Neutral Relay

Size 4-4FB

NOTE: This relay is always furnished with four dependent front and back contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.

For mounting centers see Plate E2349.

For details see Plate E2110.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.				Res. of Relay Ohms	Drawing Reference
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213		
A	F	G	R	No Coils	53000–84 Gr. 1
A1	F1	G1	R1	2	53000–84 Gr. 2
A2	F2	G2	R2	4	53000–84 Gr. 3
A3	F3	G3	R3	11	53000–84 Gr. 4
A4	F4	G4	R4	16	53000–84 Gr. 5
A5	F5	G5	R5	50	53000–84 Gr. 6
A6	F6	G6	R6	100	53000–84 Gr. 7
A7	F7	G7	R7	136	53000–84 Gr. 8
A8	F8	G8	R8	150	53000–84 Gr. 21
A9	F9	G9	R9	200	53000–84 Gr. 9
A10	F10	G10	R10	250	53000–84 Gr. 10
A11	F11	G11	R11	300	53000–84 Gr. 11
A12	F12	G12	R12	400	53000–84 Gr. 12
A13	F13	G13	R13	450	53000–84 Gr. 13
A14	F14	G14	R14	500	53000–84 Gr. 15
A15	F15	G15	R15	670	53000–84 Gr. 16
A16	F16	G16	R16	750	53000–84 Gr. 17
A17	F17	G17	R17	1000	53000–84 Gr. 18
A18	F18	G18	R18	2000	53000–84 Gr. 19
A19	F19	G19	R19	10400	53000–84 Gr. 20

(*Continued on following page*)

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Direct-Current

Regular Releasing Neutral Relay

Size 4-4FB

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.				Res. of Relay Ohms	Drawing Reference
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213		
A20	**F20**	**G20**	**R20**	22200	53000–84 Gr. 23
A21	**F21**	**G21**	**R21**	4800	53000–84 Gr. 24
A22	**F22**	**G22**	**R22**	7	53000–84 Gr. 22
A23	**F23**	**G23**	**R23**	10.8	53000–84 Gr. 25
A24	**F24**	**G24**	**R24**	1.0	53000–84 Gr. 80
A25	**F25**	**G25**	**R25**	9	53000–84 Gr. 79
A26	**F26**	**G26**	**R26**	30	53000–84 Gr. 76
A27	**F27**	**G27**	**R27**	60	53000–84 Gr. 77
A28	**F28**	**G28**	**R28**	1500	53000–84 Gr. 75
A29	**F29**	**G29**	**R29**	3000	53000–84 Gr. 81

Type K Direct-Current

Slow Releasing Neutral Relay

Size 4-4FB

NOTE: This relay is always furnished with four dependent front and back contacts.

Contacts are silver-impregnated carbon to silver front and silver to silver back.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.

For mounting centers see Plate E2349.

If relays with longer releasing time are desired, customer should so specify giving full particulars. For details see Plate E2110.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.						
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213	Res. of Relay Ohms	Minimum Time of Release Seconds at—Amps.	Drawing Reference
C	H	J	S	No Coils		53000–84 Gr. 1
C1	H1	J1	S1	25	.9 at .068	53000–84 Gr. 26
C2	H2	J2	S2	50	.9 at .050	53000–84 Gr. 27
C3	H3	J3	S3	68	.9 at .047	53000–84 Gr. 28
C4	H4	J4	S4	75	.9 at .044	53000–84 Gr. 43
C5	H5	J5	S5	100	.9 at .035	53000–84 Gr. 29
C6	H6	J6	S6	125	.9 at .034	53000–84 Gr. 31
C7	H7	J7	S7	150	.9 at .034	53000–84 Gr. 32
C8	H8	J8	S8	200	.9 at .028	53000–84 Gr. 33
C9	H9	J9	S9	225	.9 at .026	53000–84 Gr. 34
C10	H10	J10	S10	250	.9 at .026	53000–84 Gr. 35
C11	H11	J11	S11	335	.9 at .024	53000–84 Gr. 36
C12	H12	J12	S12	375	.9 at .022	53000–84 Gr. 37
C13	H13	J13	S13	400	.9 at .0165	53000–84 Gr. 38
C14	H14	J14	S14	500	.9 at .0175	53000–84 Gr. 40
C15	H15	J15	S15	800	.9 at .016	53000–84 Gr. 41

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Direct-Current

Slow Releasing Neutral Relay

Size 4-4FB

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No. With Spring Wall Hanger "X" Page 213	Fig. No. With Resilient Wall Hanger "Y" Page 213	Fig. No. With Shelf Plate "Z" Page 213	Fig. No. With Comb. Bracket "W" Page 213	Res. of Relay Ohms	Minimum Time of Release Seconds at—Amps.	Drawing Reference
C16	H16	J16	S16	1000	.9 at .014	53000–84 Gr. 42
C17	H17	J17	S17	1.5	1.0 at .216	53000–84 Gr. 49
C18	H18	J18	S18	100	.5 at .080	53000–84 Gr. 30
C19	H19	J19	S19	152	1.5 at .040	53000–84 Gr. 44
C20	H20	J20	S20	400	1.0 at .0165	53000–84 Gr. 46
C21	H21	J21	S21	500	1.0 at .0175	53000–84 Gr. 47
C22	H22	J22	S22	500	1.25 at .016	53000–84 Gr. 48
C23	H23	J23	S23	1000	.5 at .011	53000–84 Gr. 45
C24	H24	J24	S24	1.0	1.0 at .285	53000–84 Gr. 55
C25	H25	J25	S25	5.5	1.0 at .121	53000–84 Gr. 53
C26	H26	J26	S26	33	1.0 at .047	53000–84 Gr. 54
C27	H27	J27	S27	68	1.3 at .1765	53000–84 Gr. 51
C28	H28	J28	S28	400	.5 at .0225	53000–84 Gr. 39
C29	H29	J29	S29	400	1.0 at .0225	53000–84 Gr. 50
C30	H30	J30	S30	450	2.1 at .0268	53000–84 Gr. 52
C31	H31	J31	S31	500	1.0 at .018	53000–84 Gr. 56
C32	H32	J32	S32	750	1.0 at .0141	53000–84 Gr. 57

(Continued on following page)

April 1952 GENERAL RAILWAY SIGNAL COMPANY

Type K Direct-Current

Slow Releasing Neutral Relay

Size 4-4FB

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No. With Spring Wall Hanger "X" Page 213	Fig. No. With Resilient Wall Hanger "Y" Page 213	Fig. No. With Shelf Plate "Z" Page 213	Fig. No. With Comb. Bracket "W" Page 213	Res. of Relay Ohms	Minimum Time of Release Seconds at—Amps.	Drawing Reference
Special Slow Release						
C50	H50	J50	S50	250	3.5 at .048	53000–141 Gr. 9
C51	H51	J51	S51	250	4.0 at .040	53000–141 Gr. 10
C52	H52	J52	S52	400	2.9 at .021	53000–141 Gr. 6
C53	H53	J53	S53	500	2.0 at .020	53000–141 Gr. 4
C54	H54	J54	S54	500	2.5 at .024	53000–141 Gr. 7
C55	H55	J55	S55	500	3.0 at .024	53000–141 Gr. 3
C56	H56	J56	S56	500	2.5 at .016	53000–141 Gr. 11
C57	H57	J57	S57	1000	1.5 at .010	53000–141 Gr. 5
C58	H58	J58	S58	1000	2.75 at .010	53000–141 Gr. 2
C59	H59	J59	S59	1000	2.5 at .012	53000–141 Gr. 8

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Direct-Current

Slow Pickup Neutral Relay

Size 4-4FB

NOTE: This relay is always furnished with four dependent front and back contacts.
Contacts are silver-impregnated carbon to silver front and silver to silver back.
Relays are arranged to pickup in the minimum time of 1½ seconds.
This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.
For mounting centers see Plate E2349.
For details see Plate E2110.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No. With Spring Wall Hanger "X" Page 213	Fig. No. With Resilient Wall Hanger "Y" Page 213	Fig. No. With Shelf Plate "Z" Page 213	Fig. No. With Comb. Bracket "W" Page 213	Res. of Relay Ohms	Voltage Range	Normal Volts	Drawing Reference
E	K	L	T	46	1.8 to 2.3	2	53000–113 Gr. 2
E1	K1	L1	T1	160	3.6 to 4.6	4	53000–113 Gr. 3
E2	K2	L2	T2	360	5.4 to 6.9	6	53000–113 Gr. 4
E3	K3	L3	T3	580	7.2 to 9.2	8	53000–113 Gr. 5
E4	K4	L4	T4	880	9.0 to 11.5	10	53000–113 Gr. 6
E5	K5	L5	T5	1200	10.8 to 13.8	12	53000–113 Gr. 7
E6	K6	L6	T6	880	8.0 to 10.5	10.5	53000–113 Gr. 8

June 1954 GENERAL RAILWAY SIGNAL COMPANY

Type K Direct-Current

Slow Pickup, Slow Release and Quick Crossover Neutral Relay

Size 4-4FB

NOTE—The slow pickup and slow release features of this relay are slightly different than usual in that the relay maintains full contact pressure for the required time and then operates very rapidly. This quick crossover feature (both pickup and release) is desirable for relays used to pole change circuits especially when there are relays in the pole changed circuit that must remain energized during the period that the circuit is open.

This relay is always furnished with four dependent front and back contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

This relay may be wall or shelf mounted; when wall mounting a combination bracket shown on Page 213, Fig. W is required.

For mounting centers see Plate E2349.

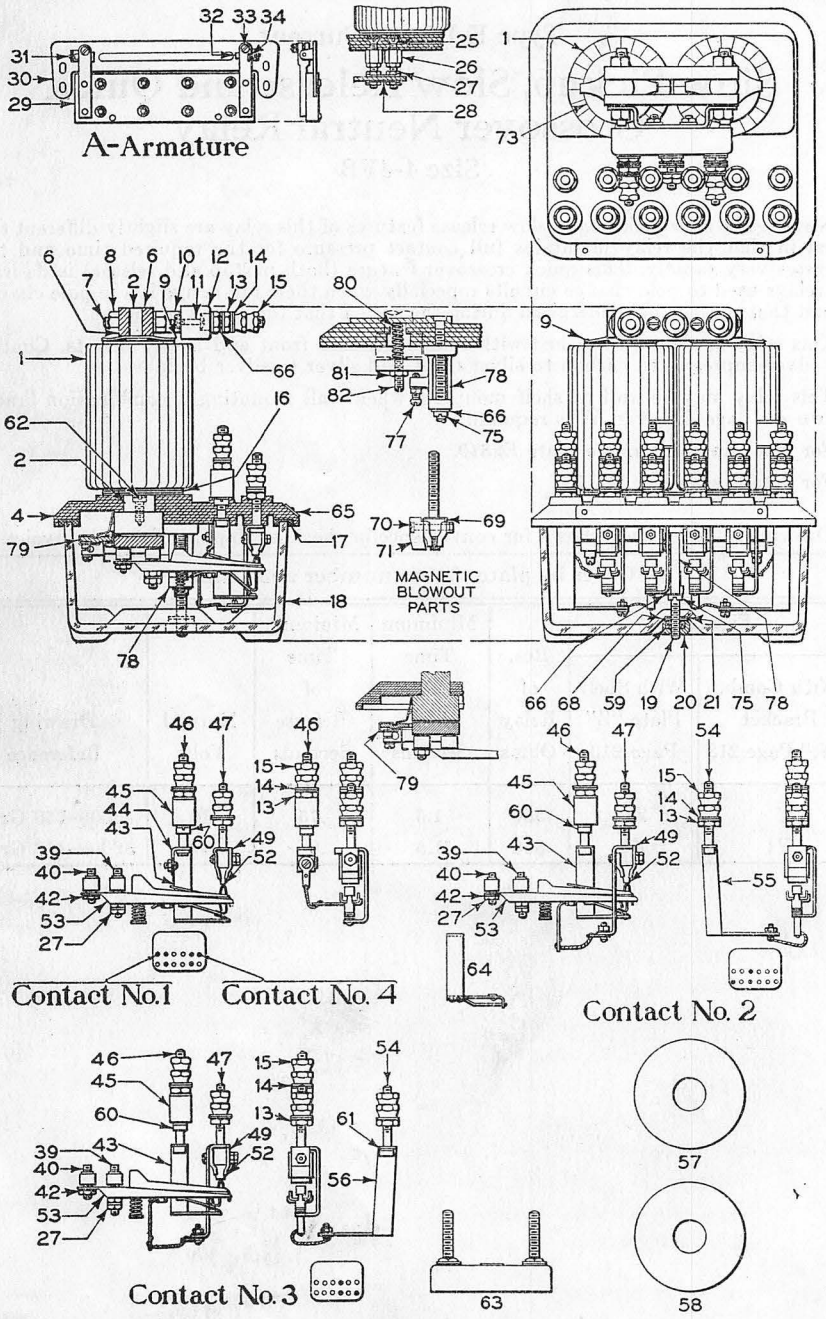
For details see Plate E2110.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.		Res. of Relay Ohms	Minimum Time of Pickup Seconds	Minimum Time of Release Seconds	Normal Volts	Drawing Reference
With Comb. Bracket "W," Page 213	With Shelf Plate "Z" Page 213					
Y	Z	580	1.5	.75	10	53000–258 Gr. 3
Y1	Z1	880	1.5	.8	12	53000–258 Gr. 2

PLATE E2110



Type K, Direct-Current, Neutral Relay
Size Four

Type K Direct-Current
Neutral Relay
Size 4

NOTE—This plate is included for ordering repair parts for all Size 4 neutral relays except special parts for the following:

Biased-Neutral,	see Plate E2167
Magnetic-Stick,	see Plate E2187
Plug-Coupled,	see Plate E2125
Power-Transfer,	see Plate E2147
Retained-Neutral,	see Plate E2175
Lamp Control,	see Plate E2191

In the event that magnetic blowouts are required on Size 4 relays they may be installed by the railroad on any one or all front contacts.

One each of the following parts are required per contact:

(a) Fig. 69—Front Holder
(b) Fig. 70—Screw and Nuts
(c) Fig. 71—Magnet
(d) Fig. U, Plate E2345—Finger Complete with heavy-duty front and regular back contact.

For relays complete with magnetic blowouts see Plate E2131.
For mounting brackets see Plate E2349.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Armature Complete, as shown, (includes 1–29, 1–30, 1–31, 1–32, 2–33 and 1–34), for all Size 4 relays except power-transfer, biased-neutral, magnetic-stick, lamp control and quick crossover	42561–6 Gr. 3
A1	as above, except for quick crossover relay (includes 1–29d, 1–30, 1–31, 1–32, 2–33 and 1–34)	42561–6 Gr. 8
A2	same as Fig. A except for lamp control relay (1–29c, 1–30, 1–31, 1–32, 2–33 and 1–34)	42561–6 Gr. 7
1	Coil for relay, specify resistance	
2	Core, for coil, for all Size 4 relays except biased-neutral	29514–51
4	Cover, only, for all Size 4 relays except power-transfer, retained-neutral, magnetic-stick, lamp control and quick crossover	29511–40
4a	Cover, with screws necessary to replace an old cover with metal supports for cores. This cover will change the relay to conform with the latest design. Includes the following parts: 1–4, 1–19, 4–25, 4–26, 4–28 and 4–62	29511–40 48565–20 363–2 12280–37 577–10 22543–9

(*Continued on following page*)

GENERAL RAILWAY SIGNAL COMPANY June 1954

Type K Direct-Current
Neutral Relay
Size 4

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
4b	same as Fig. 4, except for quick crossover relay	29511–102
6	Yoke, for cores, two required, for all Size 4 relays except biased-neutral and magnetic-stick	42836–37
7	Screw, 5/16″-18 x 1½″ hex. hd., for fastening yokes to cores	2878–1
7a	as above, except 1″ lg. for use with quick acting relays where only one yoke is employed	3440–6
8	Nut, 5/16″-18 x 7/32″, for screw Fig. 7	29954
9	Spring Washer, for top of coils	36177–2
10	Support, for terminal block	53017–1
11	Screw, No. 10-32 x 13/16″, with hex. nut and lock washer, for fastening terminal block to support Fig. 10	3044–13 577–12 53029–3
12	Terminal Block, includes terminal posts	46048–8 Gr. 4
13	Nut, No. 14-24 x 1/8″, hex., for terminal posts	46989–2
14	Washer, for terminal posts	1225–2
15	Nut, No. 14-24 x 5/16″ hex., for terminal posts	42843–1
16	Washer, felt, for use under coils	1533–10
17	Gasket, rubber, for use between glass case and relay cover	13014–248
18	Glass Case, for housing relay contacts	37380–1
19	Screw, No. 14-24 x 3 21/32″ sq. hd., for fastening glass case to cover	48565–20
19a	as above, except 3½″ lg., for use on early design of relays	48565–8
20	Knurled Nut, No. 14-24, for screw Fig. 19	846–8
21	Washer, rubber, for use next to glass case, requires washer Fig. 68	1333–12
25	Screw, No. 10-32 x 1⅜″ fl. hd., for fastening armature support to cover	363–2
25a	as above, except 1½″ lg., for fastening armature to support. For use on relays of early design	2602–5
26	Nut, No. 10-32 x 11/32″ lg. spacer, for screw Fig. 25	577–10
27	Nut, No. 10-32 x 1/8″, for screw Fig. 25, also for screws on insulators, Figs. 39 and 40	577–12

(*Continued on following page*)

Type K Direct-Current
Neutral Relay
Size 4

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
28	Plate Washer, for screws Fig. 25	22543–9
29	Armature Complete, for relay. Includes brackets for hinging, riveted in place, for all Size 4 relays except power-transfer, biased-neutral, magnetic-stick, lamp control and quick crossover	29524–8 Gr. 3
29a	as above, except for biased-neutral relay	29524–8 Gr. 7
29b	same as Fig. 29 except for power-transfer relay	29524–8 Gr. 5
29c	same as Fig. 29 except for lamp control relay	29524–8 Gr. 8
29d	same as Fig. 29 except for quick crossover relay	29524–8 Gr. 9
30	Bracket, for supporting armature	53016
31	Trunnion, as shown, for armature	35269–4
32	Trunnion, headless, for armature	35269–3
33	Screw, No. 8-32 x 5/16″, fil. hd., with lock washer, for bracket armature	370–1 53029–21
34	Escutcheon Pin, No. 16 x 1/2″, for trunnion	0677–2
39	Insulator Complete, includes long screw for fastening finger to armature	42792–12
40	Insulator Complete, includes short screw for fastening finger to armature	42792–10
42	Lock Washer, for screws on insulators	53029–3
43	Back Contact Support, as shown, has silver back contact for all spaces except "make-before-break contact" on Secondary Relay of Primary-Secondary Combination	51320–5 Gr. 1
43a	as above, except heavy-duty	51320–5 Gr. 3
44	Terminal Complete, for terminal post, for contact finger. For Contact Nos. 1 and 4	51559–39 3931–6 3614–1 53029–26
45	Insulator, for terminal post, Fig. 46	7350–29
46	Terminal Post, No. 14-24 x 2 5/8″, sq. hd. One required as terminal for contact finger and one required for back contact	350–10

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY June 1954

Type K Direct-Current
Neutral Relay
Size 4

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
47	Terminal Post, No. 14-24 x 1¾" sq. hd., for front contact	38275–12
49	Holder Complete, for front contact, includes screw and nuts	53018–1 53018 37404–1 55159–18
52	Front Contact, as shown, silver-impregnated carbon. For use on a-c. or d-c. high or low voltages, for all relays except "make-before-break contact" on Secondary Relay of Primary-Secondary Combination	13026–26
52a	as above, except silver contact, for "make-before-break contact" on Secondary Relay of Primary-Secondary Combination	51321–13 Gr. 2
53	Finger Complete, articulated, for details and order references see Plate E2345	
53a	as above, except for quick crossover relay	53011–41 Gr. 19
54	Terminal Post, No. 14-24 x 1¾", for contact finger. For use with Contact No. 2 and Contact No. 3	350–5 51559–8
55	Terminal, long, as shown, for contact finger. For use with Contact No. 2	3931–6 3614–1 53029–26
56	Terminal, long, as shown, for contact finger. For use with Contact No. 3	51559–7 3931–6 3614–1 53029–26
57	Washer, copper, for slow release relays	1225–16
58	Washer, fibre, for slow release relays	493–39
59	Spring, for nut Fig. 20	786–150
60	Spanner Nut, No. 14-24, with lead washer, for contact groups	42840–3 1533–33
61	Lock Washer, for terminal posts	1225–75

(*Continued on following page*)

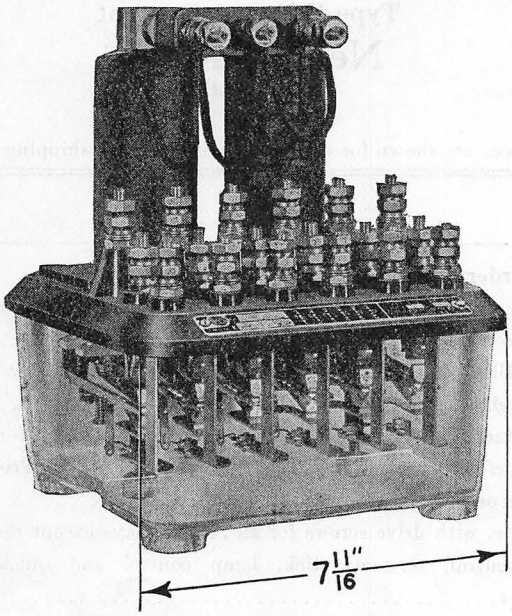
June 1954 GENERAL RAILWAY SIGNAL COMPANY

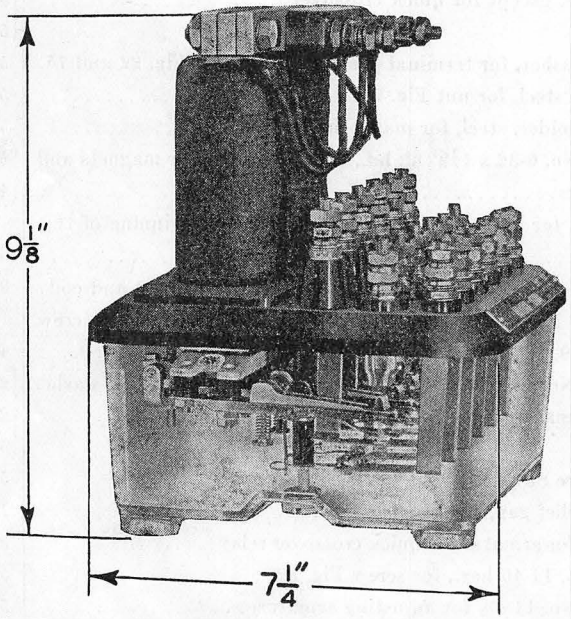
Type K Direct-Current
Neutral Relay
Size 4

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
62	Screw, No. 10-32 x ½" fil. hd., for fastening cores to cover, for all Size 4 relays except plug-coupled and magnetic-stick	12280–37
63	Terminal Block Complete, as shown for slow pickup and slow release relays	46048–10 Gr. 3
64	Back Contact Support, as shown, has silver back contact, for "make-before-break contact" on Secondary Relay of Primary-Secondary Combination	51320–16 Gr. 1
65	Name Plate, with drive screws for all Size 4 relays except retained-neutral, magnetic-stick, lamp control and quick crossover	401–135 54392–1
65a	as above, except for quick crossover	401–302 54392–1
66	Lock Washer, for terminal posts, also for nuts Fig. 22 and 75	53029–22
68	Washer, steel, for nut Fig. 20	50587–1
69	Front Holder, steel, for magnetic blowout	53018–7
70	Screw, No. 6-32 x 1 1/16" fil. hd., with hex. nuts, for magnets and holders	55159–13 49227–2
71	Magnet, for magnetic blowout. (See note at beginning of this list.)	57157
73	Fibre Washer, for use between spring washer Fig. 9 and coil	34017–5
75	Spanner Nut, No. 14-24, for fastening armature stop to screw Fig. 19	42840–3
77	Screw, No. 8-32 x ⅝" fil. hd., with hex. nut and lock washer, for armature stop Fig. 78	28989–43 28948–1 53029–21
78	Armature Stop	58754
79	Plate, relief gap, one required	18050
80	Spring, for armature of quick crossover relay	586–194
81	Nut, No. 14-40 hex., for screw Fig. 82	53084–1
82	Screw, No. 14-40, for adjusting armature	53089–2

PLATE E2113





Type K, Direct-Current, Neutral Relay
Size Six

Type K Direct-Current

Regular Releasing Neutral Relay

Size 6-6FB

NOTE: This relay is furnished with six dependent front and back contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

This relay may be wall- or shelf-mounted as illustrated on Page 213 at the beginning of Section E Part 21.

For mounting centers see Plate E2349.

For details see Plate E2114.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.					
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213	Res. of Relay Ohms	Drawing Reference
A	F	G	B	No Coils	53000–96 Gr. 1
A1	F1	G1	B1	2	53000–96 Gr. 2
A2	F2	G2	B2	4	53000–96 Gr. 3
A3	F3	G3	B3	11	53000–96 Gr. 4
A4	F4	G4	B4	16	53000–96 Gr. 5
A5	F5	G5	B5	50	53000–96 Gr. 6
A6	F6	G6	B6	100	53000–96 Gr. 7
A7	F7	G7	B7	136	53000–96 Gr. 8
A8	F8	G8	B8	150	53000–96 Gr. 21
A9	F9	G9	B9	200	53000–96 Gr. 9
A10	F10	G10	B10	250	53000–96 Gr. 10
A11	F11	G11	B11	300	53000–96 Gr. 11
A12	F12	G12	B12	400	53000–96 Gr. 12
A13	F13	G13	B13	450	53000–96 Gr. 13
A14	F14	G14	B14	500	53000–96 Gr. 15
A15	F15	G15	B15	670	53000–96 Gr. 16
A16	F16	G16	B16	750	53000–96 Gr. 17
A17	F17	G17	B17	1000	53000–96 Gr. 18
A18	F18	G18	B18	2000	53000–96 Gr. 19
A19	F19	G19	B19	8400	53000–96 Gr. 20

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Direct-Current

Regular Releasing Neutral Relay

Size 6-6FB

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.				Res. of Relay Ohms	Drawing Reference
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213		
A20	**F20**	**G20**	**B20**	7	53000–96 Gr. 22
A21	**F21**	**G21**	**B21**	6.66	53000–96 Gr. 90
A22	**F22**	**G22**	**B22**	9	53000–96 Gr. 91
A23	**F23**	**G23**	**B23**	60	53000–96 Gr. 23
A24	**F24**	**G24**	**B24**	1500	53000–96 Gr. 24
A25	**F25**	**G25**	**B25**	3000	53000–96 Gr. 92
A26	**F26**	**G26**	**B26**	4800	53000–96 Gr. 25

Type K Direct-Current

Regular Releasing Neutral Relay

Size 6-4FB and 2F

NOTE: This relay is furnished with four dependent front and back contacts and two independent front contacts.

Contacts are silver-impregnated carbon to silver front and silver to silver back.

This relay may be wall- or shelf-mounted as illustrated on Page 213 at the beginning of Section E Part 21.

For mounting centers see Plate E2349.

For details see Plate E2114.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.				Res. of Relay Ohms	Drawing Reference
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213		
H	**J**	**K**	**D**	No Coils	53000–138 Gr. 1
H1	**J1**	**K1**	**D1**	2	53000–138 Gr. 2
H2	**J2**	**K2**	**D2**	4	53000–138 Gr. 3
H3	**J3**	**K3**	**D3**	7	53000–138 Gr. 22
H4	**J4**	**K4**	**D4**	11	53000–138 Gr. 4
H5	**J5**	**K5**	**D5**	16	53000–138 Gr. 5
H6	**J6**	**K6**	**D6**	50	53000–138 Gr. 6
H7	**J7**	**K7**	**D7**	100	53000–138 Gr. 7
H8	**J8**	**K8**	**D8**	136	53000–138 Gr. 8
H9	**J9**	**K9**	**D9**	150	53000–138 Gr. 21
H10	**J10**	**K10**	**D10**	200	53000–138 Gr. 9
H11	**J11**	**K11**	**D11**	250	53000–138 Gr. 10
H12	**J12**	**K12**	**D12**	300	53000–138 Gr. 11
H13	**J13**	**K13**	**D13**	400	53000–138 Gr. 12
H14	**J14**	**K14**	**D14**	450	53000–138 Gr. 13
H15	**J15**	**K15**	**D15**	500	53000–138 Gr. 15
H16	**J16**	**K16**	**D16**	670	53000–138 Gr. 16
H17	**J17**	**K17**	**D17**	750	53000–138 Gr. 17
H18	**J18**	**K18**	**D18**	1000	53000–138 Gr. 18
H19	**J19**	**K19**	**D19**	2000	53000–138 Gr. 19
H20	**J20**	**K20**	**D20**	8400	53000–138 Gr. 20
H21	**J21**	**K21**	**D21**	9	53000–138 Gr. 23

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Direct-Current

Slow Releasing Neutral Relay

Size 6-6FB

NOTE: This relay is furnished with six dependent front and back contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.

For mounting centers see Plate E2349.

If relays with longer releasing time are desired, customer should so specify giving full particulars. For details see Plate E2114.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No. With Spring Wall Hanger "X" Page 213	Fig. No. With Resilient Wall Hanger "Y" Page 213	Fig. No. With Shelf Plate "Z" Page 213	Fig. No. With Comb. Bracket "W" Page 213	Res. of Relay Ohms	Minimum Time of Release Seconds at—Amps.	Drawing Reference
C	L	M	Q	No Coils	.....	53000–96 Gr. 1
C1	L1	M1	Q1	25	.9 at .079	53000–96 Gr. 26
C2	L2	M2	Q2	50	.9 at .059	53000–96 Gr. 27
C3	L3	M3	Q3	68	.9 at .056	53000–96 Gr. 28
C4	L4	M4	Q4	75	.9 at .052	53000–96 Gr. 41
C5	L5	M5	Q5	100	.9 at .041	53000–96 Gr. 29
C6	L6	M6	Q6	125	.9 at .040	53000–96 Gr. 30
C7	L7	M7	Q7	150	.9 at .040	53000–96 Gr. 31
C8	L8	M8	Q8	200	.9 at .032	53000–96 Gr. 32
C9	L9	M9	Q9	225	.9 at .030	53000–96 Gr. 33
C10	L10	M10	Q10	250	.9 at .0305	53000–96 Gr. 34
C11	L11	M11	Q11	335	.9 at .028	53000–96 Gr. 35
C12	L12	M12	Q12	375	.9 at .026	53000–96 Gr. 36
C13	L13	M13	Q13	400	.9 at .0195	53000–96 Gr. 37
C14	L14	M14	Q14	500	.9 at .020	53000–96 Gr. 38
C15	L15	M15	Q15	800	.9 at .019	53000–96 Gr. 39

(Continued on following page)

April 1952 GENERAL RAILWAY SIGNAL COMPANY

Type K Direct-Current
Slow Releasing Neutral Relay
Size 6-6FB

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No. With Spring Wall Hanger "X" Page 213	Fig. No. With Resilient Wall Hanger "Y" Page 213	Fig. No. With Shelf Plate "Z" Page 213	Fig. No. With Comb. Bracket "W" Page 213	Res. of Relay Ohms	Minimum Time of Release Seconds at—Amps.	Drawing Reference
C16	**L16**	**M16**	**Q16**	1000	.9 at .016	53000–96 Gr. 40
C17	**L17**	**M17**	**Q17**	500	.5 at .020	53000–96 Gr. 42
C18	**L18**	**M18**	**Q18**	33	1.0 at .069	53000–96 Gr. 45
C19	**L19**	**M19**	**Q19**	152	1.0 at .0363	53000–96 Gr. 44
C20	**L20**	**M20**	**Q20**	250	1.0 at .036	53000–96 Gr. 43
C21	**L21**	**M21**	**Q21**	400	1.0 at .0225	53000–96 Gr. 46
Partial Slow Release						
C50	**L50**	**M50**	**Q50**	38	*.15 at .0435	53000–96 Gr. 79
C51	**L51**	**M51**	**Q51**	100	*.15 at .0293	53000–96 Gr. 75
C52	**L52**	**M52**	**Q52**	200	*.15 at .0218	53000–96 Gr. 76
C53	**L53**	**M53**	**Q53**	300	*.15 at .0173	53000–96 Gr. 80
C54	**L54**	**M54**	**Q54**	450	*.15 at .0161	53000–96 Gr. 77
C55	**L55**	**M55**	**Q55**	740	*.15 at .0125	53000–96 Gr. 78
Special Slow Release						
C70	**L70**	**M70**	**Q70**	225	3.1 at .030	53000–285 Gr. 37
C71	**L71**	**M71**	**Q71**	350	3.0 at .023	53000–285 Gr. 8
C72	**L72**	**M72**	**Q72**	350	3.0 at .030	53000–85 Gr. 97
C73	**L73**	**M73**	**Q73**	500	1.3 at .024	53000–228 Gr. 2
C74	**L74**	**M74**	**Q74**	700	2.75 at .0143	53000–85 Gr. 109
C75	**L75**	**M75**	**Q75**	1000	1.0 at .010	53000–215 Gr. 2

*This approx. release time is based on approx. 150% of working current.

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Direct-Current

Slow Releasing Neutral Relay

Size 6-4FB and 2F

NOTE: This relay is furnished with four dependent front and back contacts and two independent front contacts. Contacts are silver-impregnated carbon to silver front and silver to silver backs.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.

For mounting centers see Plate E2349.

If relays with longer releasing time are desired, customer should so specify giving full particulars. For details see Plate E2114.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No. With Spring Wall Hanger "X" Page 213	Fig. No. With Resilient Wall Hanger "Y" Page 213	Fig. No. With Shelf Plate "Z" Page 213	Fig. No. With Comb. Bracket "W" Page 213	Res. of Relay Ohms	Minimum Time of Release Seconds at—Amps.	Drawing Reference
N	P	R	X	No Coils	.....	53000–138 Gr. 1
N1	P1	R1	X1	25	.9 at .079	53000–138 Gr. 26
N2	P2	R2	X2	50	.9 at .059	53000–138 Gr. 27
N3	P3	R3	X3	68	.9 at .056	53000–138 Gr. 28
N4	P4	R4	X4	75	.9 at .052	53000–138 Gr. 41
N5	P5	R5	X5	100	.9 at .041	53000–138 Gr. 29
N6	P6	R6	X6	125	.9 at .040	53000–138 Gr. 30
N7	P7	R7	X7	150	.9 at .040	53000–138 Gr. 31
N8	P8	R8	X8	200	.9 at .032	53000–138 Gr. 32
N9	P9	R9	X9	225	.9 at .030	53000–138 Gr. 33
N10	P10	R10	X10	250	.9 at .0305	53000–138 Gr. 34
N11	P11	R11	X11	250	1.0 at .036	53000–138 Gr. 43
N12	P12	R12	X12	335	.9 at .028	53000–138 Gr. 35
N13	P13	R13	X13	375	.9 at .026	53000–138 Gr. 36
N14	P14	R14	X14	400	.9 at .0195	53000–138 Gr. 37
N15	P15	R15	X15	500	.9 at .020	53000–138 Gr. 38

(Continued on following page)

Type K Direct-Current

Slow Releasing Neutral Relay

Size 6-4FB and 2F

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No. With Spring Wall Hanger "X" Page 213	Fig. No. With Resilient Wall Hanger "Y" Page 213	Fig. No. With Shelf Plate "Z" Page 213	Fig. No. With Comb. Bracket "W" Page 213	Res. of Relay Ohms	Minimum Time of Release Seconds at—Amps.	Drawing Reference
N16	**P16**	**R16**	**X16**	500	.5 at .020	53000–138 Gr. 42
N17	**P17**	**R17**	**X17**	800	.9 at .019	53000–138 Gr. 39
N18	**P18**	**R18**	**X18**	1000	.9 at .016	53000–138 Gr. 40
Partial Slow Release						
N50	**P50**	**R50**	**X50**	100	*.15 at .0293	53000–138 Gr. 75
N51	**P51**	**R51**	**X51**	200	*.15 at .0218	53000–138 Gr. 76
N52	**P52**	**R52**	**X52**	300	*.15 at .0173	53000–138 Gr. 79
N53	**P53**	**R53**	**X53**	450	*.15 to .0161	53000–138 Gr. 77
N54	**P54**	**R54**	**X54**	740	*.15 at .0125	53000–138 Gr. 78

*This approx. release time is based on approx. 150% of working current.

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Direct-Current

Slow Pickup Neutral Relay

Size 6-6 FB

NOTE: This relay is always furnished with six dependent front and back contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

Relays are arranged to pick up in the minimum time of 1½ seconds.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.

For mounting centers see Plate E2349.

For details see Plate E2114.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.				Res. of Relay Ohms	Voltage Range	Normal Volts	Drawing Reference
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213				
E	S	T	Y	46	1.8 to 2.3	2	53000–114 Gr. 2
E1	S1	T1	Y1	160	3.6 to 4.6	4	53000–114 Gr. 3
E2	S2	T2	Y2	360	5.4 to 6.9	6	53000–114 Gr. 4
E3	S3	T3	Y3	580	7.2 to 9.2	8	53000–114 Gr. 5
E4	S4	T4	Y4	880	9.0 to 11.5	10	53000–114 Gr. 6
E5	S5	T5	Y5	1200	10.8 to 13.8	12	53000–114 Gr. 7
E6	S6	T6	Y6	880	8.0 to 10.5	10.5	53000–114 Gr. 8

Type K Direct-Current

Slow Pickup, Slow Release and Quick Crossover Neutral Relay

Size 6-6FB

NOTE—The slow pickup and slow release features of this relay are slightly different from usual in that the relay maintains full contact pressure for the required time and then operates very rapidly. This quick crossover feature (both pickup and release) is desirable for relays used to pole change circuits, especially when there are relays in the pole changed circuit that must remain energized during the period that the circuit is open.

This relay is always furnished with six dependent front and back contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back. This relay may be wall or shelf mounted. When wall mounting a combination bracket shown on Page 213, Fig. W is required.

For mounting centers see Plate E2349.

For details see Plate E2114.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.		Res. of Relay Ohms	Minimum Time of Pickup Seconds	Minimum Time of Release Seconds	Normal Volts	Drawing Reference
With Comb. Bracket "W," Page 213	With Shelf Plate "Z" Page 213					
Za	**Wa**	580	1.5	.75	10	53000–259 Gr. 3
Za1	**Wa1**	880	1.5	.70	12	53000–259 Gr. 2

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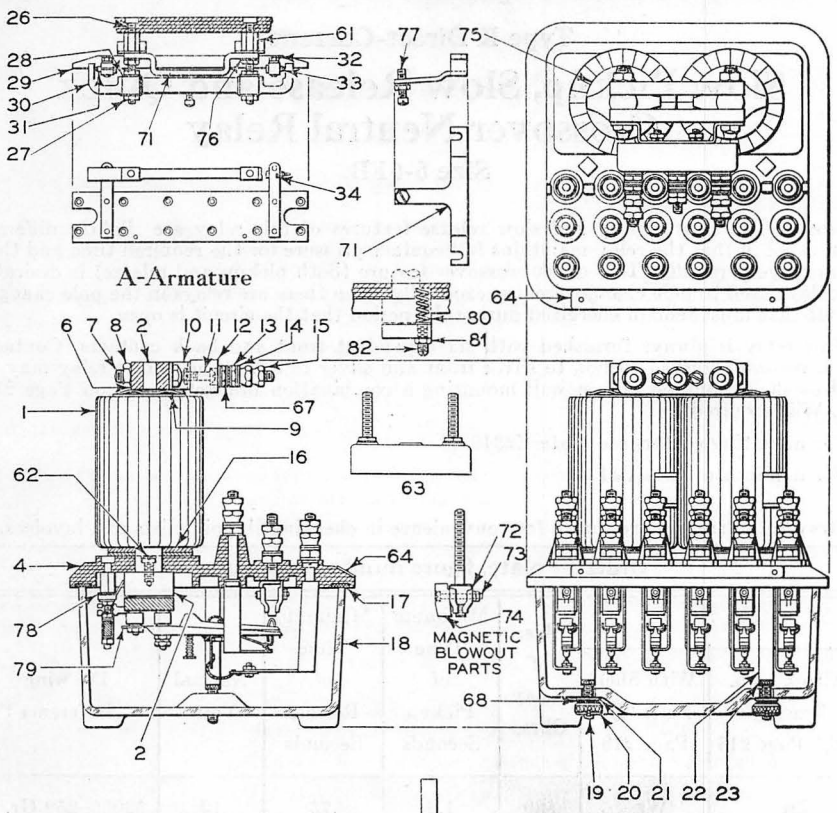
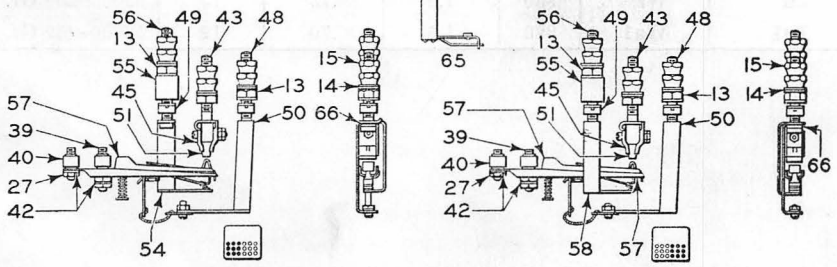
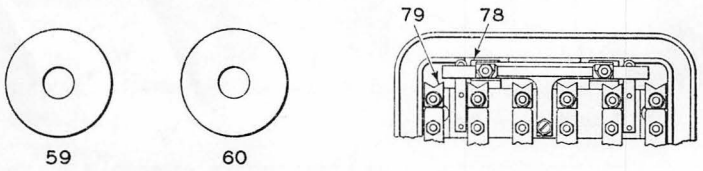




Contact Nos. 1, 2 or 3

Contact Nos. 4, 5 or 6



Type K, Direct-Current, Neutral Relay
Size Six

Type K Direct-Current

Neutral Relay

Size 6

NOTE—This plate is included for ordering repair parts for all Size 6 neutral relays except special parts for the following:

Biased-Natural, see Plate E2171
Power-Transfer, see Plate E2151
Retained-Neutral, see Plate E2179

In the event that magnetic blowouts are required on Size 6 relays they may be installed by the railroad on any one or all front contacts.

One each of the following parts are required per contact:
(a) Fig. 72—Front Holder
(b) Fig. 73—Screw and Nuts
(c) Fig. 74—Magnet
(d) Fig. U, Plate E2345—Finger Complete with heavy-duty front and regular back contact.

On relays not previously equipped with these blowouts it may be necessary to alter the cover slightly as additional clearance is required for the magnets.

For relays complete with magnetic blowouts see Plate E2133.

For mounting brackets see Plate E2349.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Armature Complete, as shown, for all Size 6 regular, slow-release, slow-pickup, and magnetic-blowout relays (1–29, 1–30, 1–31, 2–32, 1–33, 1–34)	42561–9 Gr. 2
A1	as above, except for quick crossover relays (1–29d, 1–30, 1–31, 2–32, 1–33 and 1–34)	42561–9 Gr. 12
1	Coil, for relay, specify resistance	
2	Core, for coil, for all Size 6 relays except biased-neutral and quick crossover	29514–51
2a	as above, except for quick crossover relay	29514–175
4	Cover only, for all Size 6 relays except power-transfer, retained-neutral, magnetic-blowout, quick crossover and lamp control	29511–47
4a	Cover, with screws necessary to replace an old cover with metal supports for cores. This cover will change the relay to conform with the latest design. Includes the following parts: 1–4, 2–19, 2–26, 4–61, 4–62	29511–47 48565–8 351–16 12280–37 577–14

(*Continued on following page*)

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Type K Direct-Current
Neutral Relay
Size 6

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
4b	same as Fig. 4, except for magnetic-blowout relays	29511–86
4c	same as Fig. 4, except for quick crossover relay	29511–67
6	Yoke, for cores, two required	42836–37
7	Screw, 5/16″-18 x 1 1/2″ hex. hd., for fastening yokes to cores	2878–1
8	Nut, 5/16″-18 x 7/32″, for screw Fig. 7	29954
9	Spring Washer, for top of coils	36177–2
10	Support, for terminal block	53017–1
11	Screw, No. 10-32 x 13/16″, with hex. nut and lock washer, for fastening terminal block to support Fig. 10	3044–13 577–12 53029–3
12	Terminal Block, includes terminal posts, for all Size 6 relays except power-transfer and biased-neutral	46048–8 Gr. 4
13	Nut, No. 14-24 x 1/8″ hex., for terminal posts	46989–2
14	Washer, for terminal posts	1225–2
15	Nut, No. 14-24 x 5/16″ hex., for terminal posts	42843–1
16	Washer, felt, for use under coils	1533–10
17	Gasket, rubber, for use between glass case and relay cover	13014–234
18	Glass Case, for housing relay contacts	37380–13
19	Screw, No. 14-24 x 3 9/16″ sq. hd., for fastening glass case to relay cover	48565–8
20	Knurled Nut, No. 14-24, with spring, for screw Fig. 19	846–8 786–150
21	Washer, rubber, for use next to glass case, requires washer Fig. 68	1333–12
22	Bushing, insulating, for screw Fig. 19	35282–2
23	Knurled Nut, No. 14-24, for screw Fig. 19	35281–4
26	Screw, No. 10-32 x 2 1/2″ sq. hd., for fastening armature bracket to cover	351–16
26a	Stud, shouldered, for fastening armature bracket to support. For use on relays of early design	8885–34

(*Continued on following page*)

Type K Direct-Current
Neutral Relay
Size 6

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
27	Nut, No. 10-32 x 1/8", for screw Fig. 26 and stud Fig. 26a, also for screws on insulators Figs. 39 and 40	577–12
28	Lock Washer, for nuts on screw Fig. 26	1601–37
29	Armature Complete, includes brackets for hinging, riveted in place, for all Size 6 relays except power-transfer, biased-neutral, retained-neutral and quick crossover	29524–9 Gr. 2
29a	as above, except for power-transfer relay	29524–9 Gr. 5
29b	same as Fig. 29 except for retained-neutral relay	29524–9 Gr. 4
29c	same as Fig. 29 except for biased-neutral relay	29524–9 Gr. 7
29d	same as Fig. 29, except for quick crossover relay	29524–9 Gr. 8
30	Bracket, for supporting armature	53016–1
31	Trunnion, as shown, for armature	35269–4
32	Screw, No. 8-32 x 3/8" hex. hd., with lock washer, for bracket on armature	29525–7 53029–21
33	Trunnion, headless, for armature	35269–3
34	Escutcheon Pin, No. 16 x 1/2", for trunnion	0677–2
39	Insulator Complete, includes long screw, for fastening finger to armature	42792–12
40	Insulator Complete, includes short screw for fastening finger to armature	42792–10
42	Lock Washer, for screws on insulators	53029–3
43	Terminal Post, No. 14-24, for front contacts	38275–12
45	Holder Complete, as shown, for front contact, includes screw and nuts	53018 53018–1 55159–18 37404–1
48	Terminal Post, No. 14-24 x 1 3/4" sq. hd., for contact finger	350–5
49	Spanner Nut, No. 14-24, with lead washer, for terminal post	42840–3 1533–33

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY June 1954

Type K Direct-Current
Neutral Relay
Size 6

Drawing references are shown for convenience in checking shipping lists and invoices.

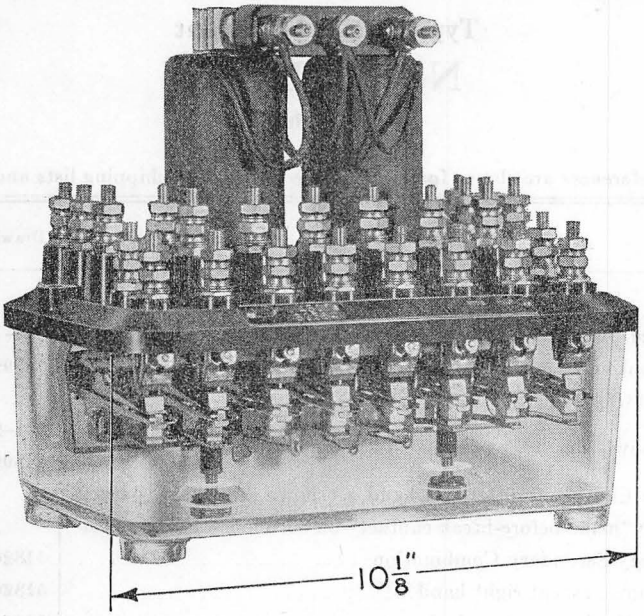
Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
50	Terminal, as shown, for contact finger	51559–25 3931–6 3614–1 53029–26
51	Front Contact, silver-impregnated carbon, for use on a-c. or d-c. high or low voltages, for all relays except "make-before-break contact" on Secondary Relay of Primary-Secondary Combination	13026–26
51a	as above, except silver contact, for "make-before-break contact" on Secondary Relay of Primary-Secondary Combination	51321–13 Gr. 2
54	Back Contact Support, right hand, as shown, for contacts Nos. 1, 2 and 3, except "make-before-break contact" of Secondary Relay of Primary-Secondary Combination and magnetic-blowout relays	51320–5 Gr. 1
54a	as above, except heavy-duty	51320–5 Gr. 3
55	Insulator, for terminal post	7350–29
56	Terminal Post, No. 14-24 x 2 7/16" sq. hd., for back contact	350–9
57	Finger Complete, articulated, for details and order references see Plate E2345	
57a	as above, except for quick crossover relay	53011–41 Gr. 19
58	Back Contact Support, as shown, left hand, has silver contact, for Contacts Nos. 4, 5 and 6, except magnetic-blowout relays	51320–5 Gr. 2
58a	as above, except heavy-duty	51320–5 Gr. 4
59	Washer, copper, for slow release relays	1225–16
60	Washer, fibre, for slow release relays	493–39
61	Nut, No. 10-32 x 5/8" hex., for screw Fig. 26	577–14
62	Screw, No. 10-32 x 1/2" fil. hd., for fastening cores to cover	12280–37
63	Terminal Block Complete, as shown, for slow pickup and slow release relays	46048–10 Gr. 3

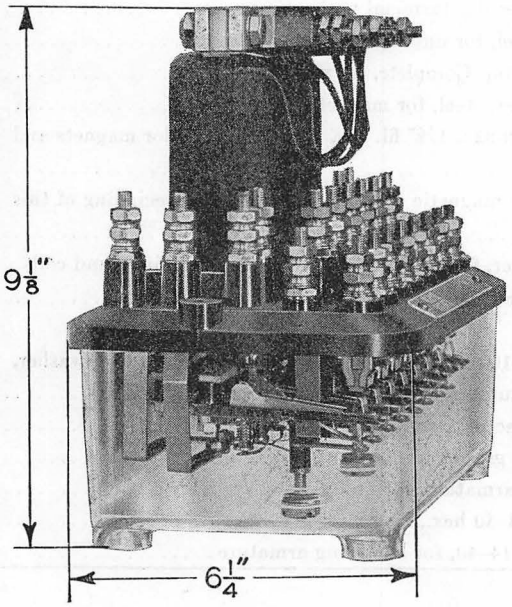
(*Continued on following page*)

Type K Direct-Current
Neutral Relay
Size 6

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
64	Name Plate, with drive screws, for relays with six dependent front and back contacts, for all Size 6 relays except retained-neutral	401–137 54392–1
64a	as above, except for relays with six front and four back contacts	401–205 54392–1
65	Back Contact Support, left hand, as shown, has silver contact, for "make-before-break contact" on Secondary Relay of Primary-Secondary Combination	51320–16 Gr. 2
65a	as above, except right hand	51320–16 Gr. 1
66	Lock Washer, for terminal posts	1225–75
67	Lock Washer, for terminal posts	53029–22
68	Washer, steel, for nut Fig. 20	50587–1
71	Armature Stop Complete, for relays	57922–1 Gr. 1
72	Front Holder, steel, for magnetic blowouts	53018–7
73	Screw, No. 6-32 x 1 1/16" fil. hd., with hex. nuts, for magnets and holders	55159–13 49227–2
74	Magnet, for magnetic blowouts. (See note at beginning of this list)	57157
75	Fibre Washer, for use between spring washer Fig. 9 and coils	34017–5
76	Lock Washer, for nut Fig. 27	53029–3
77	Screw, No. 10-32 x 3/4" fil. hd., with hex. nut and lock washer, for armature stop	12280–38 577–12 53029–3
78	Plate, connector, two required	18053
79	Plate, relief gap, six required	18052
80	Spring, for armature, for quick crossover relay	586–196
81	Nut, No. 14–40 hex., for screw Fig. 82	53084–1
82	Screw, No. 14–40, for adjusting armature	53089–2





Type K, Direct-Current, Neutral Relay
Size Eight

Type K Direct-Current

Regular Releasing Neutral Relay

Size 8-4FB and 4F

NOTE: This relay is furnished with four dependent front and back contacts and four independent front contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.

For mounting centers see Plate E2349.

For details see Plate E2119.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.				Res. of Relay Ohms	Drawing Reference
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213		
A	D	E	R	No Coils	53000–101 Gr. 1
A5	D5	E5	R5	50	53000–101 Gr. 6
A6	D6	E6	R6	100	53000–101 Gr. 7
A7	D7	E7	R7	136	53000–101 Gr. 8
A8	D8	E8	R8	150	53000–101 Gr. 20
A9	D9	E9	R9	200	53000–101 Gr. 9
A10	D10	E10	R10	250	53000–101 Gr. 10
A11	D11	E11	R11	300	53000–101 Gr. 11
A12	D12	E12	R12	400	53000–101 Gr. 12
A13	D13	E13	R13	450	53000–101 Gr. 13
A14	D14	E14	R14	500	53000–101 Gr. 19
A15	D15	E15	R15	670	53000–101 Gr. 14
A16	D16	E16	R16	750	53000–101 Gr. 15
A17	D17	E17	R17	1000	53000–101 Gr. 16
A18	D18	E18	R18	2000	53000–101 Gr. 17

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Type K Direct-Current

Slow Pickup Neutral Relay

Size 8-8FB

NOTE: This relay is furnished with eight dependent front and back contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

Relays are arranged to pick up in the minimum time of 1½ seconds.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.

For mounting centers see Plate E2349.

For details see Plate E2119.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No. With Spring Wall Hanger "X" Page 213	Fig. No. With Resilient Wall Hanger "Y" Page 213	Fig. No. With Shelf Plate "Z" Page 213	Fig. No. With Comb. Bracket "W" Page 213	Res. of Relay Ohms	Voltage Range	Normal Volts	Drawing Reference
C	F	G	S	46	1.8 to 2.3	2	53000–115 Gr. 2
C1	F1	G1	S1	160	3.6 to 4.6	4	53000–115 Gr. 3
C2	F2	G2	S2	360	5.4 to 6.9	6	53000–115 Gr. 4
C3	F3	G3	S3	580	7.2 to 9.2	8	53000–115 Gr. 5
C4	F4	G4	S4	880	9.0 to 11.5	10	53000–115 Gr. 6
C5	F5	G5	S5	1200	10.8 to 13.8	12	53000–115 Gr. 7

Type K Direct-Current

Regular Releasing Neutral Relay

Size 8-8FB

NOTE: This relay is furnished with eight dependent front and back contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.

For mounting centers see Plate E2349.

For details see Plate E2119.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.				Res. of Relay Ohms	Drawing Reference
With Spring Wall Hager "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213		
H	**J**	**K**	**T**	No Coils	53000–108 Gr. 1
H5	**J5**	**K5**	**T5**	50	53000–108 Gr. 6
H6	**J6**	**K6**	**T6**	100	53000–108 Gr. 7
H7	**J7**	**K7**	**T7**	136	53000–108 Gr. 8
H8	**J8**	**K8**	**T8**	150	53000–108 Gr. 9
H9	**J9**	**K9**	**T9**	200	53000–108 Gr. 10
H10	**J10**	**K10**	**T10**	250	53000–108 Gr. 11
H11	**J11**	**K11**	**T11**	300	53000–108 Gr. 12
H12	**J12**	**K12**	**T12**	400	53000–108 Gr. 13
H13	**J13**	**K13**	**T13**	450	53000–108 Gr. 14
H14	**J14**	**K14**	**T14**	500	53000–108 Gr. 15
H15	**J15**	**K15**	**T15**	670	53000–108 Gr. 17
H16	**J16**	**K16**	**T16**	750	53000–108 Gr. 18
H17	**J17**	**K17**	**T17**	1000	53000–108 Gr. 19
H18	**J18**	**K18**	**T18**	2000	53000–108 Gr. 20
H19	**J19**	**K19**	**T19**	1502	53000–108 Gr. 21
H20	**J20**	**K20**	**T20**	4800	53000–108 Gr. 22

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Direct-Current

Slow Releasing Neutral Relay

Size 8-8FB

NOTE: This relay is furnished with eight dependent front and back contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.

For mounting centers see Plate E2349.

If relays with longer releasing time are desired, customer should so specify giving full particulars. For details see Plate E2119.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.						
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213	Res. of Relay Ohms	Minimum Time of Release Seconds at—Amps.	Drawing Reference
L	M	N	U	No Coils	.....	53000–110 Gr. 1
L1	M1	N1	U1	25	.9 at .081	53000–110 Gr. 2
L2	M2	N2	U2	50	.9 at .060	53000–110 Gr. 3
L3	M3	N3	U3	68	.9 at .057	53000–110 Gr. 4
L4	M4	N4	U4	75	.9 at .053	53000–110 Gr. 5
L5	M5	N5	U5	100	.9 at .042	53000–110 Gr. 6
L6	M6	N6	U6	125	.9 at .041	53000–110 Gr. 7
L7	M7	N7	U7	150	.9 at .041	53000–110 Gr. 8
L8	M8	N8	U8	200	.9 at .033	53000–110 Gr. 9
L9	M9	N9	U9	225	.9 at .031	53000–110 Gr. 10
L10	M10	N10	U10	250	.9 at .0315	53000–110 Gr. 11
L11	M11	N11	U11	335	.9 at .0285	53000–110 Gr. 12
L12	M12	N12	U12	375	.9 at .0265	53000–110 Gr. 13
L13	M13	N13	U13	400	.9 at .020	53000–110 Gr. 14
L14	M14	N14	U14	500	.9 at .0205	53000–110 Gr. 15
L15	M15	N15	U15	800	.9 at .0195	53000–110 Gr. 16
L16	M16	N16	U16	1000	.9 at .0165	53000–110 Gr. 17

(Continued on following page)

Type K Direct-Current

Slow Releasing Neutral Relay

Size 8-8FB

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No. With Spring Wall Hanger "X" Page 213	Fig. No. With Resilient Wall Hanger "Y" Page 213	Fig. No. With Shelf Plate "Z" Page 213	Fig. No. With Comb. Bracket "W" Page 213	Res. of Relay Ohms	Minimum Time of Release Seconds at—Amps.	Drawing Reference
Partial Slow Release						
L50	**M50**	**N50**	**U50**	100	*.1 at .0328	53000–108 Gr. 75
L51	**M51**	**N51**	**U51**	200	*.1 at .0245	53000–108 Gr. 76
L52	**M52**	**N52**	**U52**	450	*.1 at .018	53000–108 Gr. 77
L53	**M53**	**N53**	**U53**	740	*.1 at .014	53000–108 Gr. 78

*This approx. release time is based on approx. 150% of working current.

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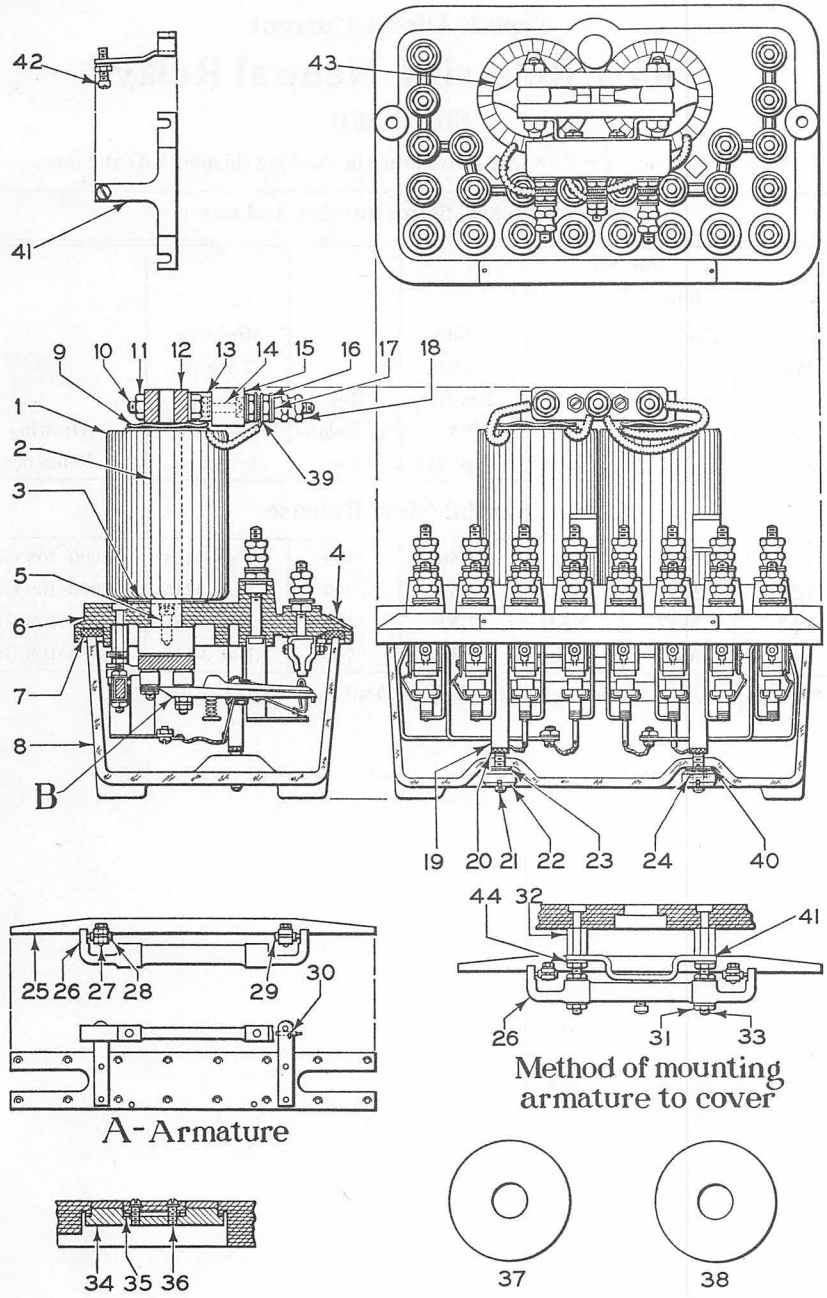

Type K, Direct-Current, Neutral Relay
Size Eight

Type K Direct-Current
Neutral Relay
Size 8

NOTE: This plate is included for ordering repair parts for all size 8 neutral relays except special parts for the Retained-Neutral, see Plate E2183

For mounting brackets see Plate E2349.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Armature Complete, as shown, for all size eight regular releasing neutral relays except retained-neutral. Has residual pins which allow .015″ air gap. (1–25, 1–26, 2–27, 1–28, 1–29, 1–30)	42561–11 Gr. 1
A1	as above, except has residual pins which allow .012″ air gap for slow releasing neutral relays. (1–25a, 1–26, 2–27, 1–28, 1–29, 1–30)	42561–11 Gr. 2
B	Contact Groups Complete, for details and order references see Plate E2121	
1	Coil, for relay, specify resistance	
2	Core, for coil	29514–51
3	Washer, felt, for use under coils	1533–10
4	Name Plate, with drive screws, for all relays with eight dependent front and back contacts except retained-neutral	401–136 54392–1
4a	as above, except for relays with eight front and four back contacts.	401–88 54392–1
5	Screw, No. 10-32 x 5/8″ fil. hd., for fastening cores to cover	12280–11
6	Cover, only, for all Size 8 relays except retained-neutral and magnetic-blowout	29511–11
6a	Cover, with screws necessary to replace an old cover with metal supports for cores. This cover will change the relay to conform with the latest design. Includes the following parts: 1–6, 4–5, 2–21, 2–32 and 2–33	29511–11 12280–11 48565–22 577–14 351–16
6b	same as Fig. 6 except for relays with magnetic blowouts	29511–84
7	Gasket, rubber, as shown, for use between glass case and relay cover	13014–236
8	Glass Case, for housing relay contacts	37380–5

(*Continued on following page*)

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Type K Direct-Current

Neutral Relay

Size 8

Drawing references are shown for convenience in checking shipping lists and invoices.

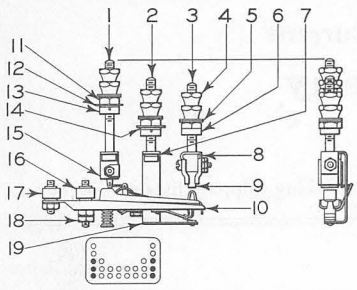
Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
9	Spring Washer, for top of coils	36177–2
10	Screw, $\frac{5}{16}$″-18 x $1\frac{1}{2}$″ hex. hd., for fastening yokes to cores	2878–1
11	Nut, $\frac{5}{16}$″-18 x $\frac{7}{32}$″ hex., for screw Fig. 10	29954
12	Yoke, for cores, two required	42836–37
13	Support, for terminal block, for all Size 8 relays except retained-neutral	53017–1
14	Screw, No. 10-32 x $\frac{13}{16}$″ rd. hd., with hex. nut and lock washer, for fastening terminal block to support Fig. 13	3044–13 577–12 53029–3
15	Terminal Block Complete, includes terminal posts	46048–8 Gr. 4
16	Nut, No. 14-24 x $\frac{1}{8}$″ hex., for terminal posts	46989–2
17	Washer, for terminal posts	1225–2
18	Nut, No. 14-24 x $\frac{5}{16}$″ hex., for terminal posts	42843–1
19	Insulating Bushing, for screw Fig. 21	35282–2
20	Nut, No. 14-24, knurled, for screw Fig. 21	35281–4
21	Screw, No. 14-24 x $3\frac{3}{4}$″ sq. hd., for fastening glass case to cover	48565–22
22	Nut, No. 14-24, for screw Fig. 21	846–8
23	Washer, rubber, for use next to glass case, requires washer Fig. 40	1333–12
24	Spring, for nut Fig. 22	786–150
25	Armature Complete, for armature Fig. A. Includes brackets for hinging, riveted in place, also for retained-neutral relay	29524–12 Gr. 1
25a	as above, except for armature Fig. A1	29524–12 Gr. 2
26	Bracket, for supporting armature	53016–1
26a	as above, except for retained-neutral relay	53016–5
27	Screw, No. 8-32 x $\frac{3}{8}$″ hex. hd., with lock washer, for bracket on armature	29525–7 53029–21
28	Trunnion, as shown, for armature	35269–4
29	Trunnion, as shown, headless, for armature	35269–3
30	Escutcheon Pin, No. 16 x $\frac{1}{2}$″, for trunnion	0677–2

(Continued on following page)

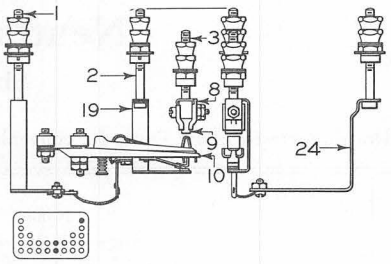
Type K Direct-Current
Neutral Relay
Size 8

Drawing references are shown for convenience in checking shipping lists and invoices.

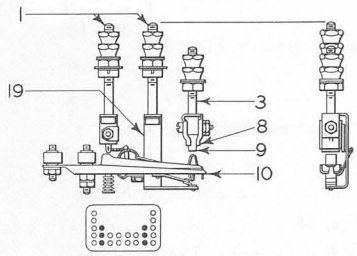
Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
31	Nut, No. 10-32 x 1/8" hex., with lock washer, for use on screw Fig. 33	577–12 1601–37
32	Spacer Nut, for screw Fig. 33	577–14
33	Screw, No. 10-32 x 2½" sq. hd., for fastening armature bracket to cover	351–16
34	Plug, for magnet holes	55289
35	Felt Washer, for use between cover and plug Fig. 34	1533–17
36	Screw, No. 8 x 3/8" rd. hd., with lock washer, for fastening plug Fig. 34 to cover	2430–7 43058
37	Copper Washer, for slow release relays	1225–16
38	Fibre Washer, for slow release relays	493–39
39	Lock Washer, for terminal posts	53029–22
40	Washer, steel, for nut Fig. 22	50587–1
41	Armature Stop Complete, for relays	57922–1 Gr. 1
42	Screw, No. 10-32 x 3/4" fil. hd., with hex. nut and lock washer, for armature stop	12280–38 577–12 53029–3
43	Fibre Washer, for use between spring washer Fig. 9 and coils	34017–5
44	Lock Washer, for nut Fig. 31	53029–3



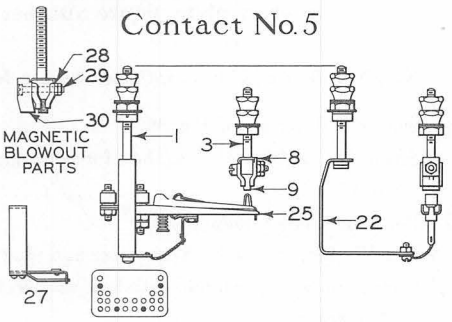
Contact Nos. 1 or 8



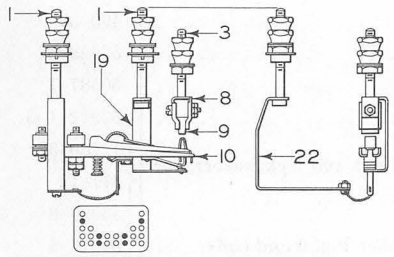
Contact No. 5



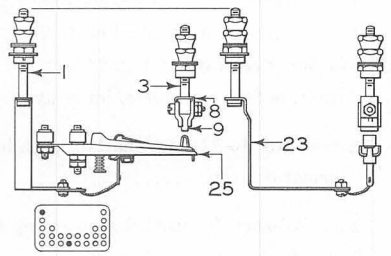
Contact Nos. 2 or 7



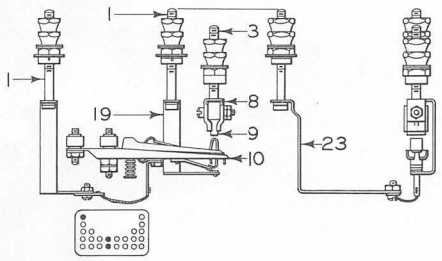
Contact Nos. 3 or 6



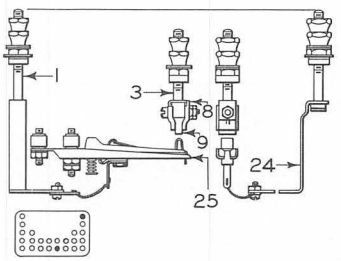
Contact Nos. 3 or 6



Contact No. 4



Contact No. 4



Contact No. 5

Contact Groups for
Type K, Direct-Current, Neutral Relay
Size Eight

Contact Groups for

Type K Direct-Current Neutral Relay

Size 8

NOTE: In the event that magnetic blowouts are required on Size 8 relays they may be installed by the railroad on any one or all front contacts.

One each of the following parts are required per contact:

(a) Fig. 28—Front Holder
(b) Fig. 29—Screw and Nuts
(c) Fig. 30—Magnet
(d) Fig. U, Plate E2345—Finger Complete with heavy-duty front and regular back contact.

On relays not previously equipped with these blowouts it may be necessary to alter the cover slightly as additional clearance is required for the magnets.

For relays complete with magnetic blowouts see Plate E2135.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
1	Terminal Post, No. 14-24 x $2\frac{7}{16}$" sq. hd., for all contact groups	350–9
2	Terminal Post, No. 14-24 x $1\frac{7}{8}$" sq. hd., for contact groups	350–6
3	Terminal Post, No. 14-24, used as front contact for all contact groups	38275–12
4	Nut, No. 14-24 x $\frac{5}{16}$" hex., for all terminal posts	42843–1
5	Washer, for all terminal posts	1225–2
6	Washer, for terminal post Fig. 3, for spaces 1, 4, 5 and 8 only	1225–70
7	Lock Washer, for terminal posts Figs. 1 and 2	1225–75
8	Holder Complete, for front contact, includes screw and nuts	53018 53018–1 55159–18 37404–1
9	Front Contact, as shown, silver-impregnated carbon. For use on a-c. or d-c. high or low voltages, for all relays except "make-before-break contact" on Secondary Relay of Primary-Secondary Combination	13026–26
9a	same as Fig. 9, except for "make-before-break contact" on Secondary Relay of Primary-Secondary Combination	51321–13 Gr. 2
10	Finger Completed, articulated, for details and order references see Plate E2345	
11	Nut, No. 14-24 x $\frac{1}{8}$" hex., for terminal posts	46989–2
12	Washer, for terminal posts	45736–2

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY April 1952

Contact Groups for

Type K Direct-Current Neutral Relay

Size 8

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
13	Spanner Nut, No. 14-24, for terminal posts	42840–5
14	Lead Washer, for terminal posts	1533–41
15	Terminal, with screw, nut and washer, for terminal post	51559–39 3931–6 3614–1 53029–26
16	Insulator Complete, includes long screw for fastening to armature	42792–12
17	Insulator Complete, includes short screw for fastening to armature	42792–10
18	Nut, No. 10-32 x 1/8″ hex., with lock washer, for insulators	577–12 53029–3
19	Support Complete, right hand, with silver contact	51320–5 Gr. 1
19a	as above, except left hand,	51320–5 Gr. 2
19b	same as Fig. 19, except heavy-duty	51320–5 Gr. 3
19c	same as Fig. 19a, except heavy-duty	51320–5 Gr. 4
22	Terminal,	51559–19
23	Terminal,	51559–18
24	Terminal,	51559–17
25	Finger Complete, articulated, has silver front contact only. For details and order references see Plate E2345 Fig. B	53011–12 Gr. 2
27	Back Contact Support, right hand, as shown, has silver back contact for "make-before-break contact" on Secondary Relay of Primary-Secondary Combination	51320–16 Gr. 1
27a	same as Fig. 27, except left hand	51320–16 Gr. 2
28	Front Holder, steel, for magnetic blowout	53018–7
29	Screw, No. 6-32 x 1 1/16″ fil. hd., with hex. nuts, for magnets and holders	55159–13 49227–2
30	Magnet, for magnetic blowout. (See note at beginning on this plate)	57157

Memoranda

PLATE E2123

Height—8⅝″
Width—8³⁄₁₆″
Depth—6⅜″

Type K, Direct-Current
Plug-Coupled, Neutral Relay
Size Four

Type K Direct-Current

Plug-Coupled
Regular Releasing Neutral Relay

Size 4-4FB

NOTE: This relay is always furnished with four dependent front and back contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E, Part 21.

For mounting centers see Plate E2349.

For details see Plate E2125.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.				Res. of Relay Ohms	Drawing Reference
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213		
A	B	C	D	1	53000–190 Gr. 95
A1	B1	C1	D1	2	53000–190 Gr. 2
A2	B2	C2	D2	4	53000–190 Gr. 3
A3	B3	C3	D3	7	53000–190 Gr. 22
A4	B4	C4	D4	9	53000–190 Gr. 94
A5	B5	C5	D5	10.8	53000–190 Gr. 25
A6	B6	C6	D6	11	53000–190 Gr. 4
A7	B7	C7	D7	16	53000–190 Gr. 5
A8	B8	C8	D8	25	53000–190 Gr. 93
A9	B9	C9	D9	30	53000–190 Gr. 91
A10	B10	C10	D10	50	53000–190 Gr. 6
A11	B11	C11	D11	60	53000–190 Gr. 92
A12	B12	C12	D12	100	53000–190 Gr. 7
A13	B13	C13	D13	136	53000–190 Gr. 8
A14	B14	C14	D14	150	53000–190 Gr. 21
A15	B15	C15	D15	200	53000–190 Gr. 9
A16	B16	C16	D16	250	53000–190 Gr. 10
A17	B17	C17	D17	300	53000–190 Gr. 11

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Direct-Current

Plug-Coupled
Regular Releasing Neutral Relay

Size 4-4FB

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.				Res. of Relay Ohms	Drawing Reference
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213		
A18	**B18**	**C18**	**D18**	400	53000–190 Gr. 12
A19	**B19**	**C19**	**D19**	450	53000–190 Gr. 13
A20	**B20**	**C20**	**D20**	500	53000–190 Gr. 15
A21	**B21**	**C21**	**D21**	670	53000–190 Gr. 16
A22	**B22**	**C22**	**D22**	750	53000–190 Gr. 17
A23	**B23**	**C23**	**D23**	1000	53000–190 Gr. 18
A24	**B24**	**C24**	**D24**	1500	53000–190 Gr. 90
A25	**B25**	**C25**	**D25**	2000	53000–190 Gr. 19
A26	**B26**	**C26**	**D26**	3000	53000–190 Gr. 96
A27	**B27**	**C27**	**D27**	4800	53000–190 Gr. 24
A28	**B28**	**C28**	**D28**	10400	53000–190 Gr. 20
A29	**B29**	**C29**	**D29**	22200	53000–190 Gr. 23

Type K Direct-Current

Plug-Coupled
Slow Releasing Neutral Relay

Size 4-4FB

NOTE: This relay is always furnished with four dependent front and back contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.

If relays with longer releasing time are desired, customer should so specify, giving full particulars.

For mounting centers see Plate E2349.

For details see Plate E2125.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.				Res. of Relay Ohms	Minimum Time of Release Seconds at—Amps.	Drawing Reference
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213			
E	F	G	H	1.5	1.0 at .216	53000–190 Gr. 49
E1	F1	G1	H1	25	.9 at .068	53000–190 Gr. 26
E2	F2	G2	H2	50	.9 at .050	53000–190 Gr. 27
E3	F3	G3	H3	68	.9 at .047	53000–190 Gr. 28
E4	F4	G4	H4	68	1.3 at .1765	53000–190 Gr. 51
E5	F5	G5	H5	75	.9 at .044	53000–190 Gr. 43
E6	F6	G6	H6	100	.9 at .035	53000–190 Gr. 29
E7	F7	G7	H7	100	.5 at .080	53000–190 Gr. 30
E8	F8	G8	H8	125	.9 at .034	53000–190 Gr. 31
E9	F9	G9	H9	150	.9 at .034	53000–190 Gr. 32
E10	F10	G10	H10	152	1.5 at .040	53000–190 Gr. 44
E11	F11	G11	H11	200	.9 at .028	53000–190 Gr. 33
E12	F12	G12	H12	225	.9 at .026	53000–190 Gr. 34
E13	F13	G13	H13	250	.9 at .026	53000–190 Gr. 35
E14	F14	G14	H14	335	.9 at .024	53000–190 Gr. 36

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Direct-Current

Plug-Coupled
Slow Releasing Neutral Relay

Size 4-4FB

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.				Res. of Relay Ohms	Minimum Time of Release Seconds at—Amps.	Drawing Reference
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213			
E15	**F15**	**G15**	**H15**	375	.9 at .022	53000–190 Gr. 37
E16	**F16**	**G16**	**H16**	400	.5 at .0225	53000–190 Gr. 39
E17	**F17**	**G17**	**H17**	400	.9 at .016	53000–190 Gr. 38
E18	**F18**	**G18**	**H18**	400	1.0 at .0225	53000–190 Gr. 46
E19	**F19**	**G19**	**H19**	450	2.1 at .0268	53000–190 Gr. 52
E20	**F20**	**G20**	**H20**	500	.9 at .0175	53000–190 Gr. 40
E21	**F21**	**G21**	**H21**	500	1.0 at .0175	53000–190 Gr. 47
E22	**F22**	**G22**	**H22**	500	1.25 at .016	53000–190 Gr. 48
E23	**F23**	**G23**	**H23**	800	.9 at .016	53000–190 Gr. 41
E24	**F24**	**G24**	**H24**	1000	.5 at .011	53000–190 Gr. 45
E25	**F25**	**G25**	**H25**	1000	.9 at .014	53000–190 Gr. 42
				Partial Slow Release		
E50	**F50**	**G50**	**H50**	2	*.25 at .138	53000–190 Gr. 79
E51	**F51**	**G51**	**H51**	38	*.25 at .033	53000–190 Gr. 80
E52	**F52**	**G52**	**H52**	100	*.25 at .0235	53000–190 Gr. 76
E53	**F53**	**G53**	**H53**	200	*.25 at .017	53000–190 Gr. 78
E54	**F54**	**G54**	**H54**	300	*.25 at .013	53000–190 Gr. 81
E55	**F55**	**G55**	**H55**	450	*.25 at .0126	53000–190 Gr. 77

*This approx. release time is based on approx. 150% of working current.

Type K Direct-Current

Plug-Coupled

Regular Releasing Neutral Relay with Magnetic Blowouts

Extra-Heavy-Duty Fronts and Regular Backs

Size 4-4FB

NOTE: This relay is always furnished with four dependent front and back contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

Standard relay is furnished with magnetic blowouts on all front contacts. If relay is required with fewer magnetic-blowout contacts, kindly consult our nearest district office for information.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E, Part 21.

For mounting centers see Plate E2349.

For details see Plate E2125.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.				Res. of Relay Ohms	Drawing Reference
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213		
J6	**K6**	**L6**	**M6**	50	53000–216 Gr. 6
J7	**K7**	**L7**	**M7**	100	53000–216 Gr. 7
J8	**K8**	**L8**	**M8**	136	53000–216 Gr. 8
J9	**K9**	**L9**	**M9**	150	53000–216 Gr. 21
J10	**K10**	**L10**	**M10**	200	53000–216 Gr. 9
J11	**K11**	**L11**	**M11**	250	53000–216 Gr. 10
J12	**K12**	**L12**	**M12**	300	53000–216 Gr. 11
J13	**K13**	**L13**	**M13**	400	53000–216 Gr. 12
J14	**K14**	**L14**	**M14**	450	53000–216 Gr. 13
J15	**K15**	**L15**	**M15**	500	53000–216 Gr. 15
J16	**K16**	**L16**	**M16**	670	53000–216 Gr. 16
J17	**K17**	**L17**	**M17**	750	53000–216 Gr. 17
J18	**K18**	**L18**	**M18**	1000	53000–216 Gr. 18
J19	**K19**	**L19**	**M19**	2000	53000–216 Gr. 19
J20	**K20**	**L20**	**M20**	4800	53000–216 Gr. 24
J21	**K21**	**L21**	**M21**	10400	53000–216 Gr. 20
J22	**K22**	**L22**	**M22**	22200	53000–216 Gr. 23

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Direct-Current

Plug-Coupled
Slow Pickup Neutral Relay
Size 4-4FB

NOTE: This relay is always furnished with four dependent front and back contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

Relays are arranged to pickup in the minimum time of 1½ seconds.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E, Part 21.

For mounting centers see Plate E2349.

For details see Plate E2125.

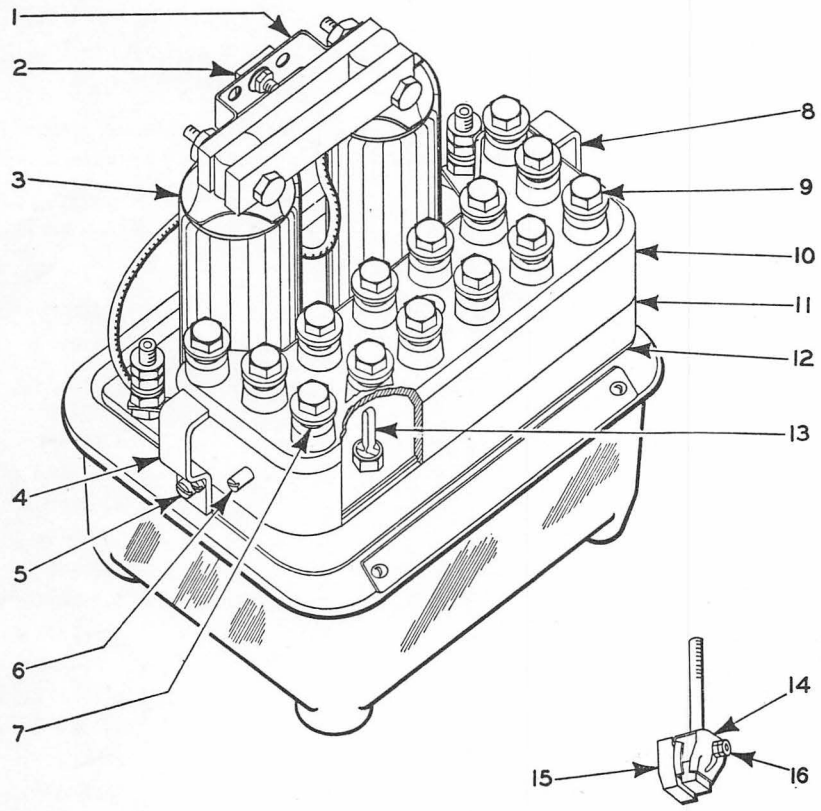
[Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No. With Spring Wall Hanger "X" Page 213	Fig. No. With Resilient Wall Hanger "Y" Page 213	Fig. No. With Shelf Plate "Z" Page 213	Fig. No. With Comb. Bracket "W" Page 213	Res. of Relay Ohms	Voltage Range	Normal Volts	Drawing Reference
N	**P**	**R**	**S**	46	1.8 to 2.3	2	53000–224 Gr. 2
N1	**P1**	**R1**	**S1**	160	3.6 to 4.6	4	53000–224 Gr. 3
N2	**P2**	**R2**	**S2**	360	5.4 to 6.9	6	53000–224 Gr. 4
N3	**P3**	**R3**	**S3**	580	7.2 to 9.2	8	53000–224 Gr. 5
N4	**P4**	**R4**	**S4**	880	8.0 to 10.5	10.5	53000–224 Gr. 8
N5	**P5**	**R5**	**S5**	880	9.0 to 11.5	10	53000–224 Gr. 6
N6	**P6**	**R6**	**S6**	1200	10.8 to 13.8	12	53000–224 Gr. 7

Memoranda

GENERAL RAILWAY SIGNAL COMPANY April 1952



For detail parts not shown here, see Plate E2110

Type K, Direct-Current
Plug-Coupled Neutral Relay
Size Four

April 1952 GENERAL RAILWAY SIGNAL COMPANY

Type K Direct-Current

Plug-Coupled Neutral Relay

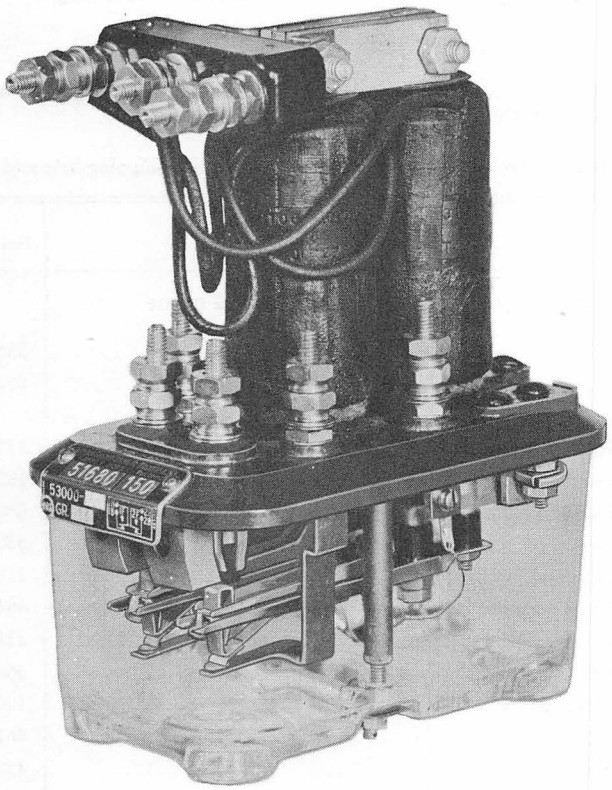
Size 4

NOTE: The detail parts shown on this plate are special for these relays. For all other detail parts for these relays see Plate E2110.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
1	Support, for insulation	53017–11
2	Insulation, for relay	37412–150
3	Coil, for plug-coupled relay, specify resistance	
4	Clip, left hand, for adapter	15795–29
5	Screw, No. 10-32 x $\frac{7}{16}$″ fil. hd., for clips Figs. 4 and 8	12280–7
6	Stud, No. 10-32, for plugboard	8885–73
7	Lock Washer, for screws Fig. 9	53029–22
8	Clip, right hand, for adapter	15795–28
9	Screw, No. 14-24, insulated head, for plugboard	56418–2
10	Plugboard Complete, includes studs Fig. 6 and screws Fig. 9	52291–5 Gr. 2
11	Adapter Complete, with plugs Fig. 13	56821 Gr. 2
12	Gasket, for adapter	13014–228
13	Plug, for adapter	56183–3 Gr. 1
14	Front Holder, for contact	53018–7
15	Magnet, for front contact	57157
16	Screw, No. 6-32 x $1\frac{1}{16}$″ fil. hd., with hex. nuts, for magnets and holders	55159–13 49227–2

PLATE E2127



Height—7⅝″ (without hanger)
Height—8¼″ (with hanger)
Width—3⅞″
Depth—6¼″

Type K, Direct-Current
Magnetic-Blowout Neutral Relay
Size Two

Type K Direct-Current

Regular Releasing Magnetic-Blowout Neutral Relay

Extra-Heavy-Duty Fronts and Regular Backs

Size 2-2FB

NOTE: This relay is always furnished with two dependent front and back contacts, which are equipped with magnetic blowouts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

The front contacts only are equipped with magnetic blowouts for carrying d-c. current loads in second-range voltage exceeding A.A.R. requirements for neutral contacts (30 to 175 volts).

The back contacts are regular contacts.

This relay is always furnished with a shock absorber which permits the relay to be wall- or shelf-mounted.

For details see Plate E2129.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Resistance of Relay—Ohms	Drawing Reference
A	0.5	53000–167 Gr. 22
A1	2	53000–167 Gr. 2
A2	3	53000–167 Gr. 3
A3	4	53000–167 Gr. 4
A4	7	53000–167 Gr. 5
A5	9	53000–167 Gr. 6
A6	11	53000–167 Gr. 7
A7	16	53000–167 Gr. 8
A8	25	53000–167 Gr. 9
A9	40	53000–167 Gr. 10
A10	50	53000–167 Gr. 11
A11	60	53000–167 Gr. 12
A12	100	53000–167 Gr. 13
A13	150	53000–167 Gr. 14
A14	200	53000–167 Gr. 15
A15	300	53000–167 Gr. 16
A16	400	53000–167 Gr. 17
A17	500	53000–167 Gr. 18

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Direct-Current

Regular Releasing Magnetic-Blowout Neutral Relay

Extra-Heavy-Duty Fronts and Regular Backs

Size 2-2FB

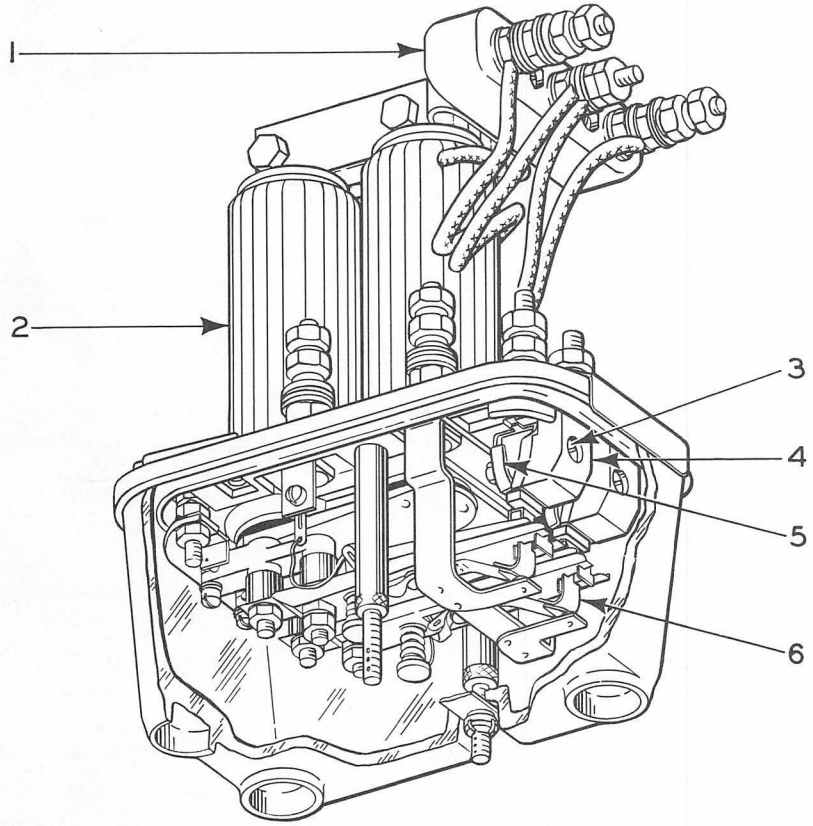
Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Resistance of Relay—Ohms	Drawing Reference
A18	600	53000–167 Gr. 19
A19	750	53000–167 Gr. 20
A20	800	53000–167 Gr. 21
A21	1000	53000–167 Gr. 23
A22	1360	53000–167 Gr. 25
A23	1500	53000–167 Gr. 24

Memoranda

GENERAL RAILWAY SIGNAL COMPANY April 1952



For detail parts not shown here, see Plate E2106

Type K, Direct-Current
Magnetic-Blowout Neutral Relay
Size Two

April 1952 GENERAL RAILWAY SIGNAL COMPANY

Type K Direct-Current

Magnetic-Blowout Neutral Relay

Size 2

NOTE: The detail parts shown on this plate are special for these relays. For all other detail parts for these relays see Plate E2106.

In the event that magnetic blowouts are required on Size 2 relays, they may be installed by the railroad on either or both front contacts.

One each of the following parts are required per contact:

(a) Fig. 3—Screw and Nuts
(b) Fig. 4—Magnet
(c) Fig. 5—Front Holder
(d) Fig. 6—Finger Complete with heavy-duty front and regular back contact.

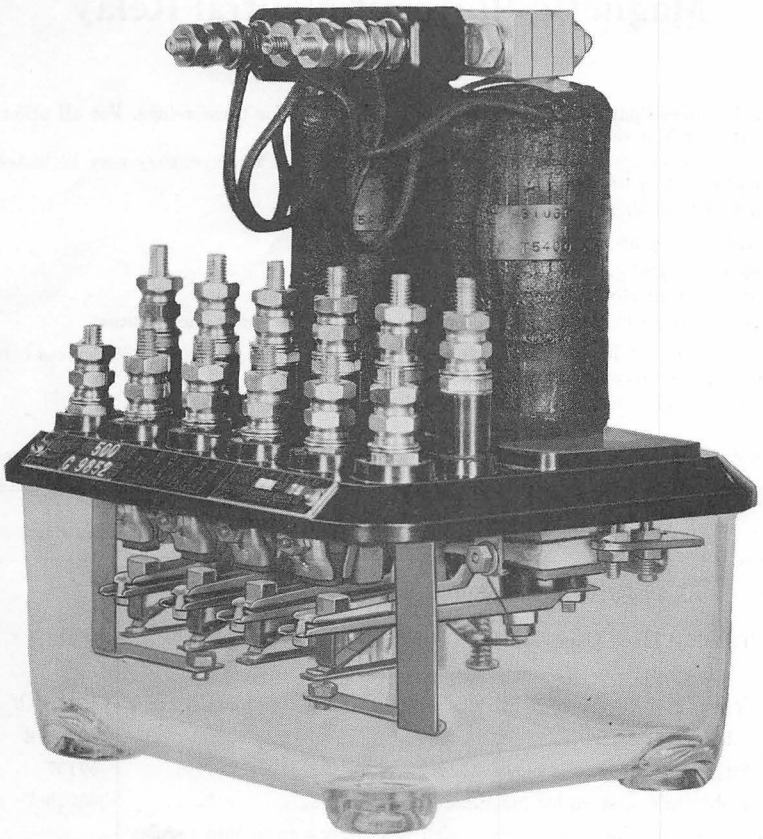
(Front contact post Fig. 44, as shown on Plate E2106 must be turned 180 degrees before assembling magnetic-blowout parts.)

For relays complete with magnetic blowouts see Plate E2127.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
1	Terminal Block Complete, for magnetic-blowout relays	46048–8 Gr. 4
2	Coil for relay, specify resistance	
3	Screw, No. 6-32 x $1\frac{1}{16}$″ fil. hd., with hex. nuts, for magnets and holders	55159–13 49227–2
4	Magnet, for magnetic blowout	57157
5	Front Holder, steel, for magnetic blowout	53018–7
6	Finger Complete, articulated, with heavy-duty front and regular back contact. For details and order references see Plate E2345, Fig. U	53011–41 Gr. 6

PLATE E2131



Height 8⅝″
Width—7⅜″
Depth 6⅜″

Type K, Direct-Current
Magnetic-Blowout Neutral Relay
Size Four

Type K Direct-Current

Regular Releasing Magnetic-Blowout Neutral Relay

Extra-Heavy-Duty Fronts and Regular Backs

Size 4-4FB

NOTE: This relay is always furnished with four dependent front and back contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

Standard relay is furnished with magnetic blowouts on all front contacts. If relay is required with fewer magnetic-blowout contacts, kindly consult our nearest district office for information.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.

For mounting centers see Plate E2349.

For details see Plate E2110.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.				Res. of Relay Ohms	Drawing Reference
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213		
A6	B6	C6	D6	50	53000–157 Gr. 6
A7	B7	C7	D7	100	53000–157 Gr. 7
A8	B8	C8	D8	136	53000–157 Gr. 8
A9	B9	C9	D9	150	53000–157 Gr. 21
A10	B10	C10	D10	200	53000–157 Gr. 9
A11	B11	C11	D11	250	53000–157 Gr. 10
A12	B12	C12	D12	300	53000–157 Gr. 11
A13	B13	C13	D13	400	53000–157 Gr. 12
A14	B14	C14	D14	450	53000–157 Gr. 13
A15	B15	C15	D15	500	53000–157 Gr. 15
A16	B16	C16	D16	670	53000–157 Gr. 16
A17	B17	C17	D17	750	53000–157 Gr. 17
A18	B18	C18	D18	1000	53000–157 Gr. 18
A19	B19	C19	D19	2000	53000–157 Gr. 19
A20	B20	C20	D20	4800	53000–157 Gr. 24
A21	B21	C21	D21	6400	53000–157 Gr. 26
A22	B22	C22	D22	10400	53000–157 Gr. 20
A23	B23	C23	D23	22200	53000–157 Gr. 23

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Direct-Current

Regular Releasing Magnetic-Blowout Neutral Relay

Extra-Heavy-Duty Fronts and Backs

Size 4-4FB

NOTE: This relay is always furnished with four dependent front and back contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

Standard relay is furnished with magnetic blowouts on all front contacts. If relay is required with fewer magnetic-blowout contacts, kindly consult our nearest district office for information.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.

For mounting centers see Plate E2349.

For details see Plate E2110.

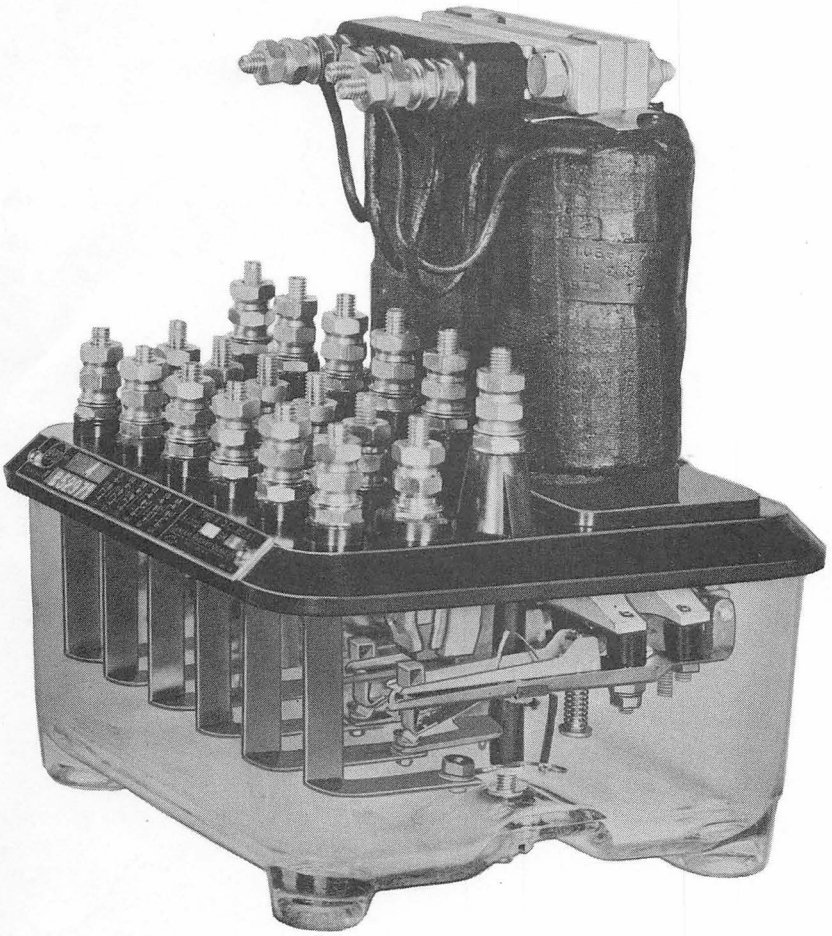
Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.				Res. of Relay Ohms	Drawing Reference
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213		
E6	**F6**	**G6**	**H6**	50	53000–165 Gr. 6
E7	**F7**	**G7**	**H7**	100	53000–165 Gr. 7
E8	**F8**	**G8**	**H8**	136	53000–165 Gr. 8
E9	**F9**	**G9**	**H9**	150	53000–165 Gr. 21
E10	**F10**	**G10**	**H10**	200	53000–165 Gr. 9
E11	**F11**	**G11**	**H11**	250	53000–165 Gr. 10
E12	**F12**	**G12**	**H12**	300	53000–165 Gr. 11
E13	**F13**	**G13**	**H13**	400	53000–165 Gr. 12
E14	**F14**	**G14**	**H14**	450	53000–165 Gr. 13
E15	**F15**	**G15**	**H15**	500	53000–165 Gr. 15
E16	**F16**	**G16**	**H16**	670	53000–165 Gr. 16
E17	**F17**	**G17**	**H17**	750	53000–165 Gr. 17
E18	**F18**	**G18**	**H18**	1000	53000–165 Gr. 18
E19	**F19**	**G19**	**H19**	2000	53000–165 Gr. 19
E20	**F20**	**G20**	**H20**	4800	53000–165 Gr. 24
E21	**F21**	**G21**	**H21**	6400	53000–165 Gr.
E22	**F22**	**G22**	**H22**	10400	53000–165 Gr. 20
E23	**F23**	**G23**	**H23**	22200	53000–165 Gr. 23

Memoranda

PLATE E2133



Height—9⅛″
Width—7 11/16″
Depth—7¼″

Type K, Direct-Current
Magnetic-Blowout Neutral Relay
Size Six

Type K Direct-Current

Regular Releasing Magnetic-Blowout Neutral Relay

Extra-Heavy-Duty Fronts and Regular Backs

Size 6-6FB

NOTE: This relay is always furnished with six dependent front and back contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

Standard relay is furnished with magnetic blowouts on all front contacts. If relay is required with fewer magnetic-blowout contacts, kindly consult our nearest district office for information.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.

For mounting centers see Plate E2349.

For details see Plate E2114.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.				Res. of Relay Ohms	Drawing Reference
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213		
A6	B6	C6	D6	50	53000–159 Gr. 6
A7	B7	C7	D7	100	53000–159 Gr. 7
A8	B8	C8	D8	136	53000–159 Gr. 8
A9	B9	C9	D9	150	53000–159 Gr. 21
A10	B10	C10	D10	200	53000–159 Gr. 9
A11	B11	C11	D11	250	53000–159 Gr. 10
A12	B12	C12	D12	300	53000–159 Gr. 11
A13	B13	C13	D13	400	53000–195 Gr. 12
A14	B14	C14	D14	450	53000–159 Gr. 13
A15	B15	C15	D15	500	53000–159 Gr. 15
A16	B16	C16	D16	670	53000–159 Gr. 16
A17	B17	C17	D17	750	53000–159 Gr. 17
A18	B18	C18	D18	1000	53000–159 Gr. 18
A19	B19	C19	D19	2000	53000–159 Gr. 19
A20	B20	C20	D20	4800	53000–159 Gr. 24
A21	B21	C21	D21	6400	53000–159 Gr. 26
A22	B22	C22	D22	10400	53000–159 Gr. 20
A23	B23	C23	D23	22200	53000–159 Gr. 23

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Direct-Current

Regular Releasing Magnetic-Blowout Neutral Relay

Extra-Heavy-Duty Fronts and Backs

Size 6-6FB

NOTE: This relay is always furnished with six dependent front and back contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

Standard relay is furnished with magnetic blowouts on all front contacts. If relay is required with fewer magnetic-blowout contacts, kindly consult our nearest district office for information.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.

For mounting centers see Plate E2349.

For details see Plate E2114.

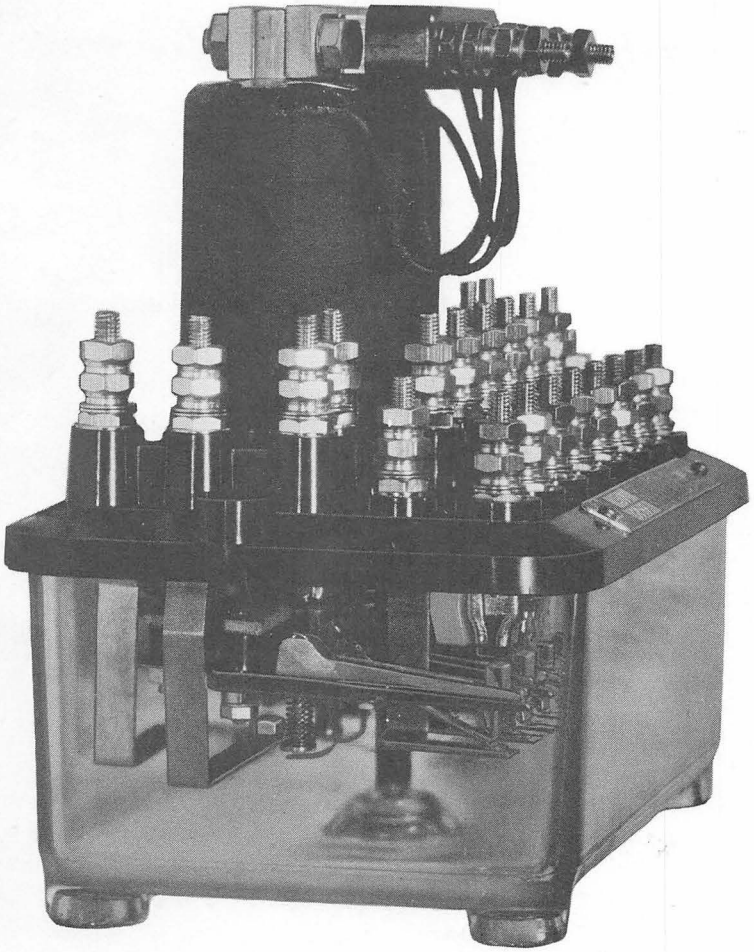
Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.				Res. of Relay Ohms	Drawing Reference
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213		
E6	F6	G6	H6	50	53000–171 Gr. 6
E7	F7	G7	H7	100	53000–171 Gr. 7
E8	F8	G8	H8	136	53000–171 Gr. 8
E9	F9	G9	H9	150	53000–171 Gr. 21
E10	F10	G10	H10	200	53000–171 Gr. 9
E11	F11	G11	H11	250	53000–171 Gr. 10
E12	F12	G12	H12	300	53000–171 Gr. 11
E13	F13	G13	H13	400	53000–171 Gr. 12
E14	F14	G14	H14	450	53000–171 Gr. 13
E15	F15	G15	H15	500	53000–171 Gr. 15
E16	F16	G16	H16	670	53000–171 Gr. 16
E17	F17	G17	H17	750	53000–171 Gr. 17
E18	F18	G18	H18	1000	53000–171 Gr. 18
E19	F19	G19	H19	2000	53000–171 Gr. 19
E20	F20	G20	H20	4800	53000–171 Gr. 24
E21	F21	G21	H21	6400	53000–171 Gr.
E22	F22	G22	H22	10400	53000–171 Gr. 20
E23	F23	G23	H23	22200	53000–171 Gr. 23

Memoranda

PLATE E2135



Height—9⅛″
Width 10⅛″
Depth—6¼″

Type K, Direct-Current
Magnetic-Blowout Neutral Relay
Size Eight

Type K Direct-Current

Regular Releasing Magnetic-Blowout Neutral Relay

Extra-Heavy-Duty Fronts and Regular Backs

Size 8-8FB

NOTE: This relay is always furnished with eight dependent front and back contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

Standard relay is furnished with magnetic blowouts on all front contacts. If relay is required with fewer magnetic-blowout contacts, kindly consult our nearest district office for information.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.

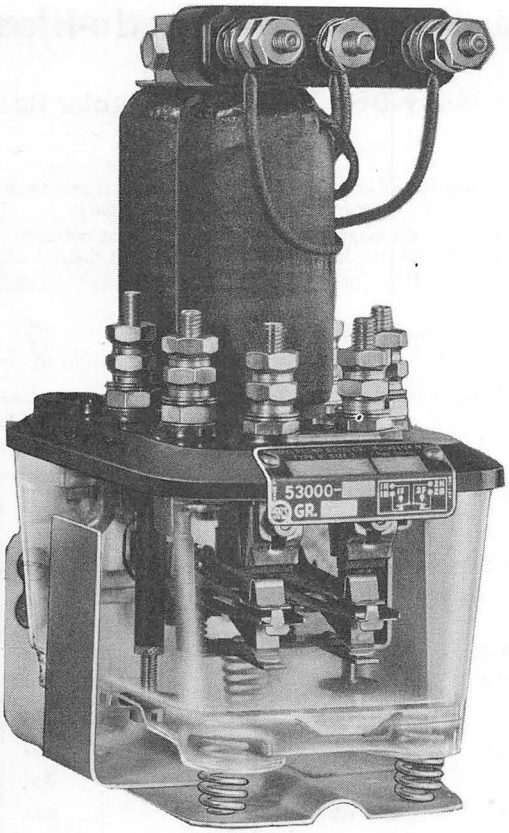
For mounting centers see Plate E2349.

For details see Plate E2119.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.				Res. of Relay Ohms	Drawing Reference
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213		
A4	B4	C4	D4	50	53000–160 Gr. 6
A5	B5	C5	D5	100	53000–160 Gr. 7
A6	B6	C6	D6	136	53000–160 Gr. 8
A7	B7	C7	D7	150	53000–160 Gr. 9
A8	B8	C8	D8	200	53000–160 Gr. 10
A9	B9	C9	D9	250	53000–160 Gr. 11
A10	B10	C10	D10	300	53000–160 Gr. 12
A11	B11	C11	D11	400	53000–160 Gr. 13
A12	B12	C12	D12	450	53000–160 Gr. 14
A13	B13	C13	D13	500	53000–160 Gr. 15
A14	B14	C14	D14	670	53000–160 Gr. 17
A15	B15	C15	D15	750	53000–160 Gr. 18
A16	B16	C16	D16	1000	53000–160 Gr. 19
A17	B17	C17	D17	2000	53000–160 Gr. 20



Height—7⅝″ (without hanger)
Height—8¼″ (with hanger)
Width—3⅞″
Depth—6¼″

Type K, Direct-Current
Approach Lighting Neutral Relay
Size Two

Type K Direct-Current

Series Line Approach Lighting Neutral Relay

Size 2-2FB

For Non-Vital Circuits

NOTE—This relay is always furnished with two dependent front and back contacts. Contacts are silver to silver front and back.

This relay is always furnished with a shock absorber which permits the relay to be wall- or shelf-mounted.

All values are reduced to A.A.R. Specifications for approach lighting relays.

For details see Plate E2106.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Resistance of Relay—Ohms	Drawing Reference
A	No Coils	53000–121 Gr. 1
A1	2	53000–121 Gr. 2
A2	3	53000–121 Gr. 3
A3	4	53000–121 Gr. 4
A4	7	53000–121 Gr. 5
A5	9	53000–121 Gr. 6
A6	11	53000–121 Gr. 7
A7	16	53000–121 Gr. 8
A8	25	53000–121 Gr. 9
A9	40	53000–121 Gr. 10
A10	50	53000–121 Gr. 11
A11	60	53000–121 Gr. 12
A12	100	53000–121 Gr. 13
A13	150	53000–121 Gr. 14
A14	200	53000–121 Gr. 15
A15	300	53000–121 Gr. 16
A16	400	53000–121 Gr. 17
A17	500	53000–121 Gr. 18
A18	600	53000–121 Gr. 19
A19	750	53000–121 Gr. 20
A20	800	53000–121 Gr. 21

GENERAL RAILWAY SIGNAL COMPANY June 1954

Type K Direct-Current

Slow Release Series Line Approach Lighting Neutral Relay

Size 2-2FB

For Non-Vital Circuits

NOTE—This relay is always furnished with two dependent front and back contacts. Contacts are silver to silver front and back.

This relay is always furnished with a shock absorber which permits the relay to be wall- or shelf-mounted.

All values are reduced to A.A.R. Specifications for approach lighting relays.

For details see Plate E2106.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Resistance of Relay—Ohms	Minimum Time of Release Seconds at—Amps.	Drawing Reference
B	.022	1.0 at 4.0	53000–121 Gr. 40
B1	1	1.0 at .262	53000–121 Gr. 42
B2	2	1.0 at .195	53000–121 Gr. 41
B3	25	.2 at .066	53000–121 Gr. 37
B4	25	1.0 at .066	53000–121 Gr. 26
B5	30	1.0 at .057	53000–121 Gr. 27
B6	50	1.0 at .044	53000–121 Gr. 28
B7	75	1.0 at .037	53000–121 Gr. 29
B8	100	1.0 at .036	53000–121 Gr. 30
B9	150	1.0 at .030	53000–121 Gr. 31
B10	200	1.0 at .027	53000–121 Gr. 32
B11	250	1.0 at .026	53000–121 Gr. 33
B12	260	1.8 at .034	53000–121 Gr. 38
B13	300	1.0 at .023	53000–121 Gr. 34
B14	375	1.0 at .022	53000–121 Gr. 35
B15	400	1.0 at .021	53000–121 Gr. 36
B16	500	1.0 at .0174	53000–121 Gr. 39

(Continued on following page)

June 1954 GENERAL RAILWAY SIGNAL COMPANY

Type K Direct-Current

Slow Release Series Line Approach Lighting Neutral Relay

Size 2-2FB

For Non-Vital Circuits

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Resistance of Relay—Ohms	Minimum Time of Release Seconds at—Amps.	Drawing Reference
		Partial Slow Release	
B50	14	*.25 at .0465	53000–121 Gr. 81
B51	41	*.25 at .026	53000–121 Gr. 79
B52	90	*.25 at .0195	53000–121 Gr. 80
B53	280	*.25 at .0115	53000–121 Gr. 75
B54	430	*.25 at .010	53000–121 Gr. 76
B55	620	*.25 at .0085	53000–121 Gr. 77
B56	980	*.25 at .007	53000–121 Gr. 78

*This approximate release time is based on approximately 150% of working current.

Memoranda

Type K Direct-Current

Series Line Approach Lighting Neutral Relay

Size 2-2FB

For Vital Circuits

NOTE—This relay is always furnished with two dependent front and back contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

This relay is always furnished with a shock absorber which permits the relay to be wall- or shelf-mounted.

For details see Plate E2106.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Resistance of Relay—Ohms	Drawing Reference
A	No Coils	53000–154 Gr. 1
A1	2	53000–154 Gr. 2
A2	3	53000–154 Gr. 3
A3	4	53000–154 Gr. 4
A4	7	53000–154 Gr. 5
A5	9	53000–154 Gr. 6
A6	11	53000–154 Gr. 7
A7	16	53000–154 Gr. 8
A8	25	53000–154 Gr. 9
A9	40	53000–154 Gr. 10
A10	50	53000–154 Gr. 11
A11	60	53000–154 Gr. 12
A12	100	53000–154 Gr. 13
A13	150	53000–154 Gr. 14
A14	200	53000–154 Gr. 15
A15	300	53000–154 Gr. 16
A16	400	53000–154 Gr. 17
A17	500	53000–154 Gr. 18
A18	600	53000–154 Gr. 19
A19	750	53000–154 Gr. 20
A20	800	53000–154 Gr. 21

GENERAL RAILWAY SIGNAL COMPANY June 1954

Type K Direct-Current

Slow Release Series Line Approach Lighting Neutral Relay

Size 2-2FB

For Vital Circuits

NOTE—This relay is always furnished with two dependent front and back contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

This relay is always furnished with a shock absorber which permits the relay to be wall- or shelf-mounted.

For details see Plate E2106.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Resistance of Relay—Ohms	Minimum Time of Release Seconds at—Amps.	Drawing Reference
B	.022	1.0 at 4.0	53000–154 Gr. 40
B1	25	.2 at .066	53000–154 Gr. 37
B2	25	1.0 at .066	53000–154 Gr. 26
B3	30	1.0 at .057	53000–154 Gr. 27
B4	50	1.0 at .044	53000–154 Gr. 28
B5	75	1.0 at .037	53000–154 Gr. 29
B6	100	1.0 at .036	53000–154 Gr. 30
B7	150	1.0 at .030	53000–154 Gr. 31
B8	200	1.0 at .027	53000–154 Gr. 32
B9	250	1.0 at .026	53000–154 Gr. 33
B10	260	1.8 at .034	53000–154 Gr. 38
B11	300	1.0 at .023	53000–154 Gr. 34
B12	375	1.0 at .022	53000–154 Gr. 35
B13	400	1.0 at .021	53000–154 Gr. 36
B14	500	1.0 at .0174	53000–154 Gr. 39

(Continued on following page)

Type K Direct-Current

Slow Release Series Line Approach Lighting Neutral Relay

Size 2-2FB

For Vital Circuits

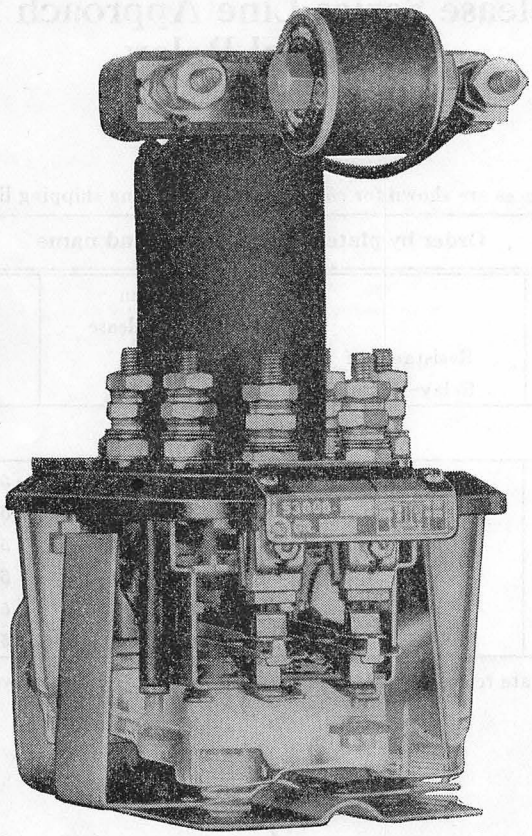
Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Resistance of Relay—Ohms	Minimum Time of Release Seconds at—Amps.	Drawing Reference
		Partial Slow Release	
B50	4	*.25 at .084	53000–154 Gr. 80
B51	41	*.25 at .026	53000–154 Gr. 79
B52	280	*.25 at .0115	53000–154 Gr. 75
B53	430	*.25 at .010	53000–154 Gr. 76
B54	620	*.25 at .0085	53000–154 Gr. 77
B55	980	*.25 at .007	53000–154 Gr. 78

*This approximate release time is based on approximately 150% of working current.

PLATE E2139



Height—8⅝″ (with hanger)
Height—8″ (without hanger)
Width—4″
Depth—7⅜″

Type K, Direct-Current
Light-Out Neutral Relay
Size Two

Type K Direct-Current

Light-Out Neutral Relay

Size 2-2FB

NOTE—This relay is always furnished with two dependent front and back contacts. Contacts are silver to silver front and back.

This relay is always furnished with a shock absorber which permits the relay to be wall- or shelf-mounted.

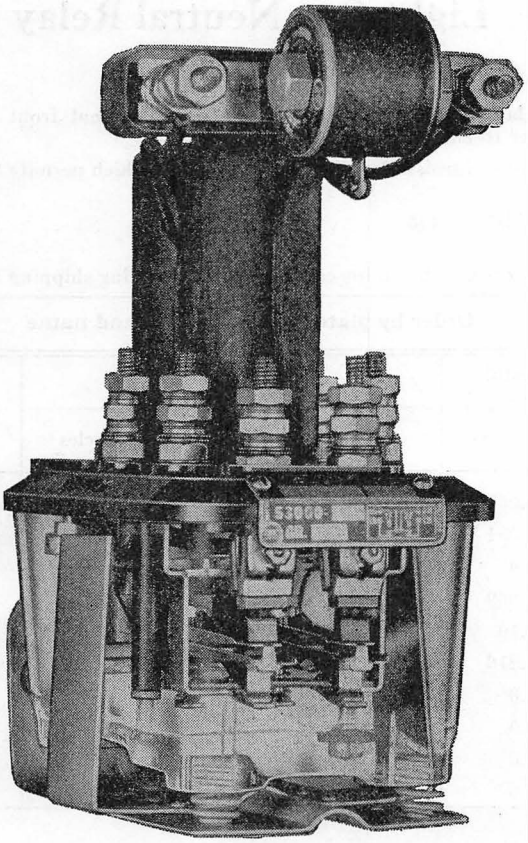
For details see Plate E2143.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Total Resistance in Ohms	Used with Lamp			Drawing Reference
		Volts	Watts	Cycles	
A	.051	8.0	13+3.5	60	53000–124 Gr. 2
A1	.051	8.0	18+3.5	60	53000–124 Gr. 2
A2	1.0	120.0	25	60	53000–124 Gr. 3
A3	.069	10.0	13+3.5	60	53000–124 Gr. 4
A4	.10	11.3	13.3	25	53000–124 Gr. 7
A5	.216	8.0	5+3.5	60	53000–124 Gr. 8
A6	1.0	120.0	40	60	53000–214 Gr. 2
A7	1.0	120.0	60	60	53000–214 Gr. 3
A8	1.0	120.0	75	60	53000–214 Gr. 4
A9	1.0	120.0	100	60	53000–214 Gr. 5

PLATE E2141



Height—8⅝″ (with hanger)
Height—8″ (without hanger)
Width—4″
Depth—7⅜″

Type K
Power-Transfer Neutral Relay
Size Two

April 1952 GENERAL RAILWAY SIGNAL COMPANY

Type K

Power-Transfer Neutral Relay

Size 2-2FB

NOTE: This relay is always furnished with two dependent front and back contacts. Contacts are silver to silver front and back.

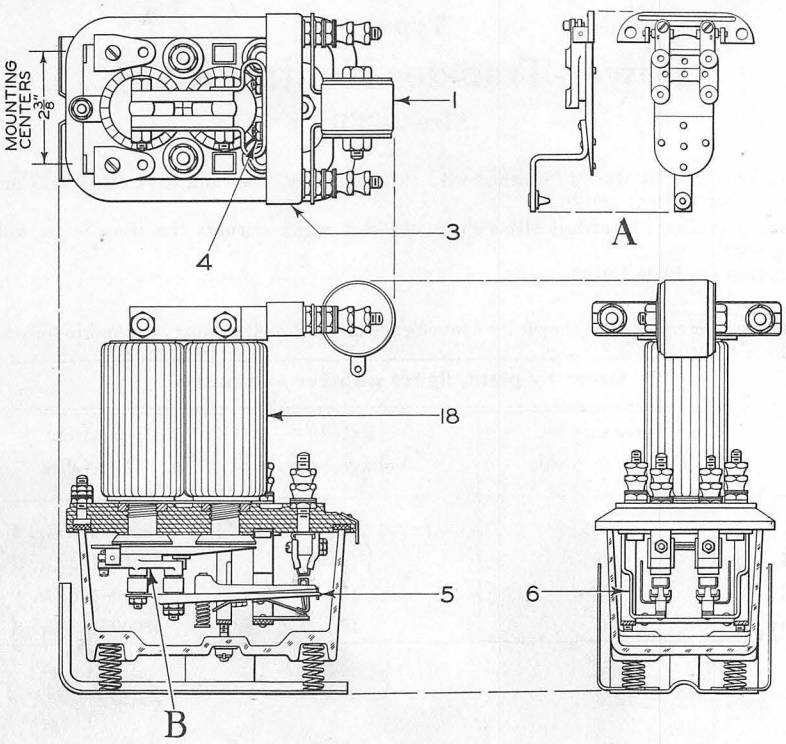
This relay is always furnished with a shock absorber which permits the relay to be wall- or shelf-mounted.

For details see Plate E2143.

Drawing references are shown for convenience in checking shipping lists and invoices.

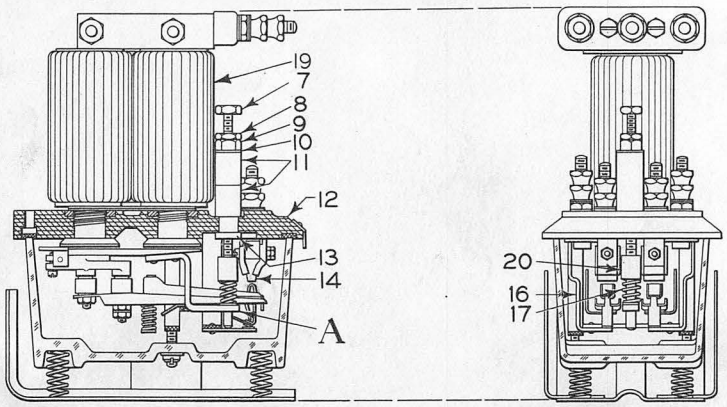
Order by plate, figure number and name

Fig. No.	Resistance in Ohms—each side	Rated Voltage—a-c.	Drawing Reference
A	100	8	53000–123 Gr. 2
A1	108	9	53000–123 Gr. 3
A2	132	10	53000–123 Gr. 4
A3	131	12	53000–123 Gr. 5



Power-Transfer and Light-Out Relays

(FOR DETAIL PARTS NOT SHOWN HERE, SEE PLATE E2106)



Primary Battery Cut-in Relay

Type K, Power-Transfer, Light-Out and Primary Battery Cut-in Neutral Relay Size Two

Type K

Power-Transfer Light-Out and Primary Battery Cut-in Neutral Relay

Size 2

The detail parts shown on this plate are special for these relays. For all other detail parts for these relays see Plate E2106.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
	Power-Transfer and Light-Out Relays	
B	Armature Complete, for power-transfer relay	42651–14 Gr. 2
1	Rectifier Complete, Type B ¼ for 8, 9 and 10 volt power-transfer relay	54728–5 Gr. 1
1a	as above, except for 12 volt power-transfer relay	54728–13 Gr. 1
1b	same as Fig. 1, except for light-out relay, specify voltage	54728
3	Terminal Block, only, for power-transfer and light-out relays	5971–24
4	Screw, No. 10-32 x ½″ fil. hd., with hex. nut and lock washer, for fastening terminal block Fig. 3 to support	12563–1 577–12 53029–3
5	Finger Complete, articulated for power-transfer relay, for details and order references see Plate E2345 Fig. A2	53011–42 Gr. 9
5a	as above, except for light-out relay, for details and order references see Plate E2345 Fig. A	53011–41 Gr. 1
6	Back Contact Support, consists of two supports riveted to a bakelite insulation block, for power-transfer and light-out relays	51320–40 Gr. 3
18	Coil, for power-transfer relay, specify resistance	31066
18a	as above, except for light-out relay	31066–32
	Primary Battery Cut-in Relay	
A	Armature Complete, for primary battery cut-in relay	42561–16 Gr. 2
7	Adjusting Stud Complete, No. 10-32, for adjusting spring pressure	29519–2 Gr. 1
8	Nut, No. 10-32 x ⅛″ hex., for locking nut Fig. 9	40796
9	Nut, ⅜″-24 x $\frac{3}{16}$″ hex., for adjusting stud	35614–2

(*Continued on following page*)

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K

Power-Transfer Light-Out and Primary Battery Cut-in Neutral Relay

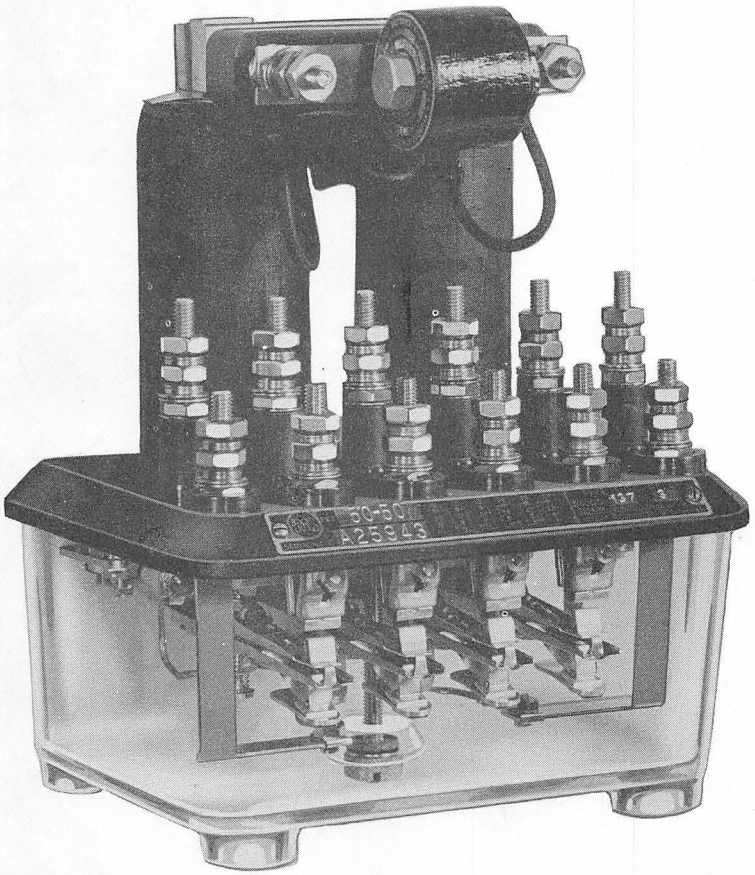
Size 2

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
10	Washer, for nut Fig. 9	16538–3
11	Insulating Bushing, for adjusting stud	7350–113
12	Cover, only, for primary battery cut-in relay	29511–57
13	Sleeve, for adjusting stud	30911–7
14	Contact, silver, for primary battery cut-in relay	51321–13 Gr. 2
16	Back Contact Support Complete, consists of two supports riveted to a bakelite insulation block	51320–40 Gr. 1
17	Spring, for armature	586–90
19	Coil, for primary battery cut-in relay, specify resistance	31066–32
20	Spring Seat, for spring Fig. 17	56176–9

Memoranda

PLATE E2145



Height—8 31/32″
Width—7⅜″
Depth—6⅜″

Type K
Power-Transfer Neutral Relay
Size Four

April 1952 GENERAL RAILWAY SIGNAL COMPANY

Type K

Power-Transfer Neutral Relay

Size 4-4FB

NOTE: This relay is always furnished with four dependent front and back contacts. Contacts are silver to silver front and back.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.

For mounting centers see Plate E2349.

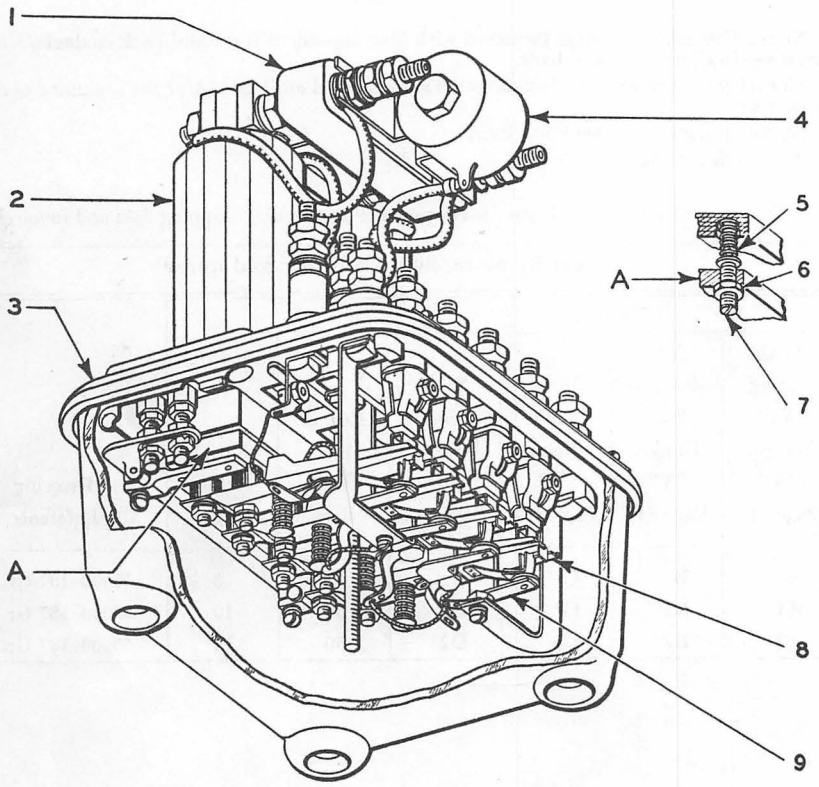
For details see Plate E2147.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.				Res. in Ohms Each Side	Rated Voltage a-c.	Drawing Reference
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213			
A	B	C	D	51	8	53000–137 Gr. 2
A1	B1	C1	D1	50	10	53000–137 Gr. 3
A2	B2	C2	D2	50	12	53000–137 Gr. 4

GENERAL RAILWAY SIGNAL COMPANY April 1952



For detail parts not shown here, see Plate E2110

Type K
Power-Transfer Neutral Relay
Size Four

April 1952 GENERAL RAILWAY SIGNAL COMPANY

Type K

Power-Transfer Neutral Relay

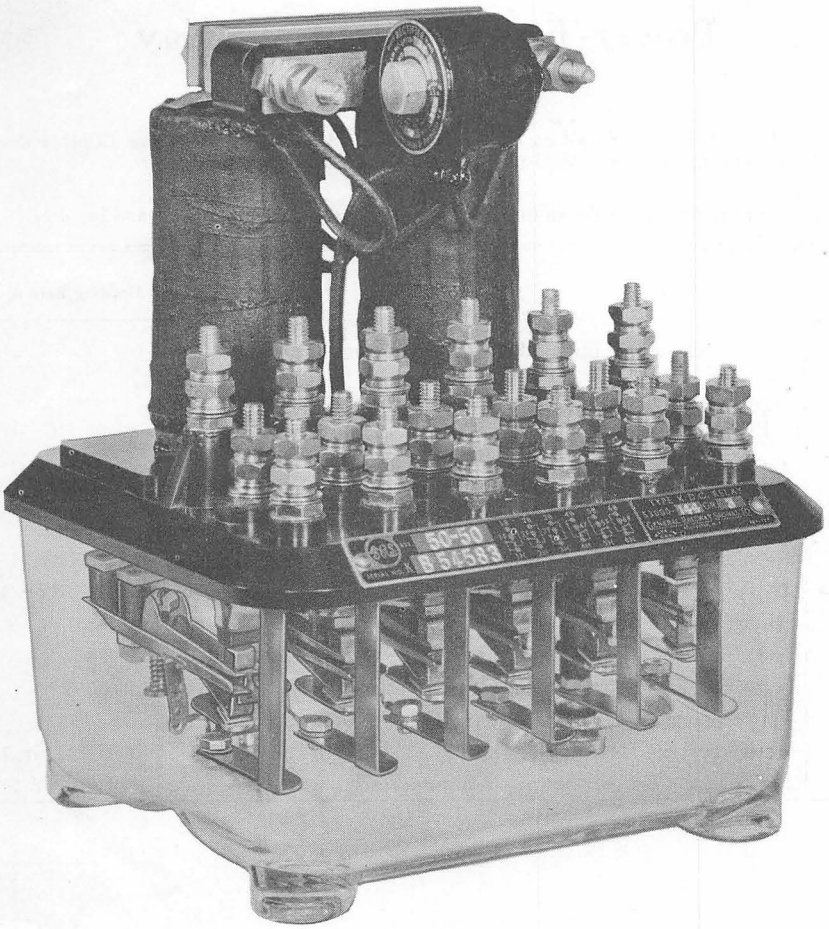
Size 4

NOTE: The detail parts shown on this plate are special for these relays. For all other detail parts for these relays see Plate E2110.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Armature Complete, for power-transfer relay. For details see Plate E2110 Fig. A	42561–6 Gr. 4
1	Terminal Block, only, for relay	5971–24
2	Coil, for relay, specify resistance	
3	Cover, for power-transfer relay	29511–62
4	Rectifier Complete, for 5 or 10 volt power-transfer relay	54728–5 Gr. 1
4a	as above, except for 12 volt power-transfer relay	54728–13 Gr. 1
5	Spring, for armature	586–137
6	Nut, No. 14-40 x 1/8" hex., for screw Fig. 7	53084–1
7	Screw, No. 14-40, for adjusting power-transfer relay	53089–3
8	Finger Complete, heavy-duty front and back, for details and order references see Plate E2345, Fig. V	53011–41 Gr. 10.
9	Back Contact Support, for power-transfer relay	51320–5 Gr. 3

PLATE E2149



Height—9¾″
Width—7 1/16″
Depth—7¼″

Type K
Power-Transfer Neutral Relay
Size Six

April 1952 GENERAL RAILWAY SIGNAL COMPANY

Type K

Power-Transfer Neutral Relay

Size 6-6FB

NOTE: This relay is always furnished with six dependent front and back contacts. Contacts are silver to silver front and back.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.

For mounting centers see Plate E2349.

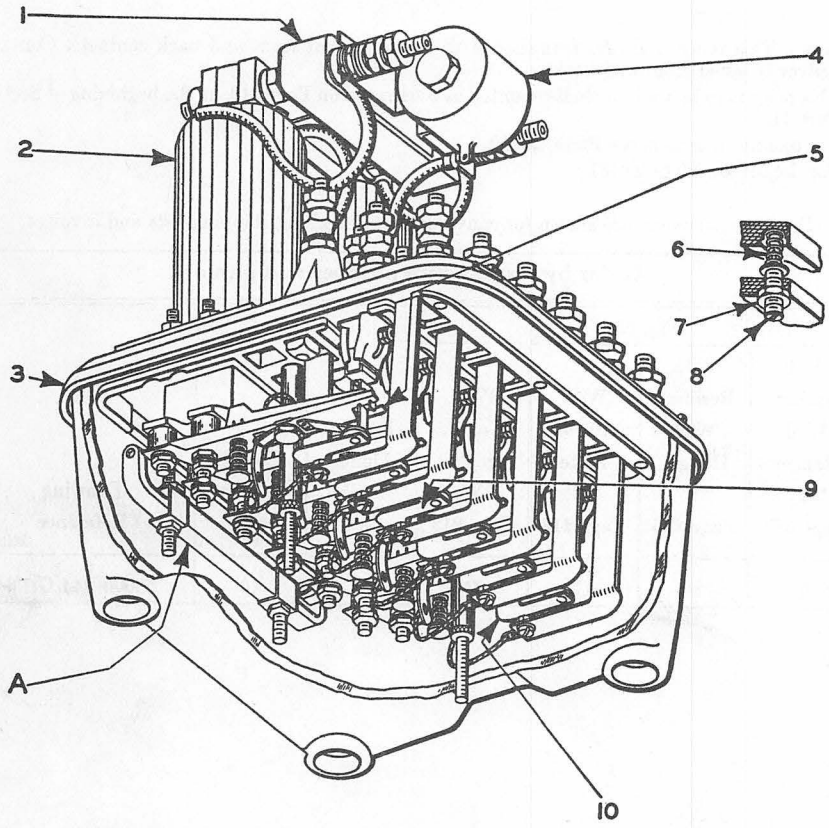
For details see Plate E2151.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.						
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213	Res. in Ohms Each Side	Rated Volatge a-c.	Drawing Reference
A	B	C	D	50	10	53000–144 Gr. 3

GENERAL RAILWAY SIGNAL COMPANY April 1952



For detail parts not shown here, see Plate E2114

Type K
Power-Transfer Neutral Relay
Size Six

April 1952 GENERAL RAILWAY SIGNAL COMPANY

Type K

Power-Transfer Neutral Relay

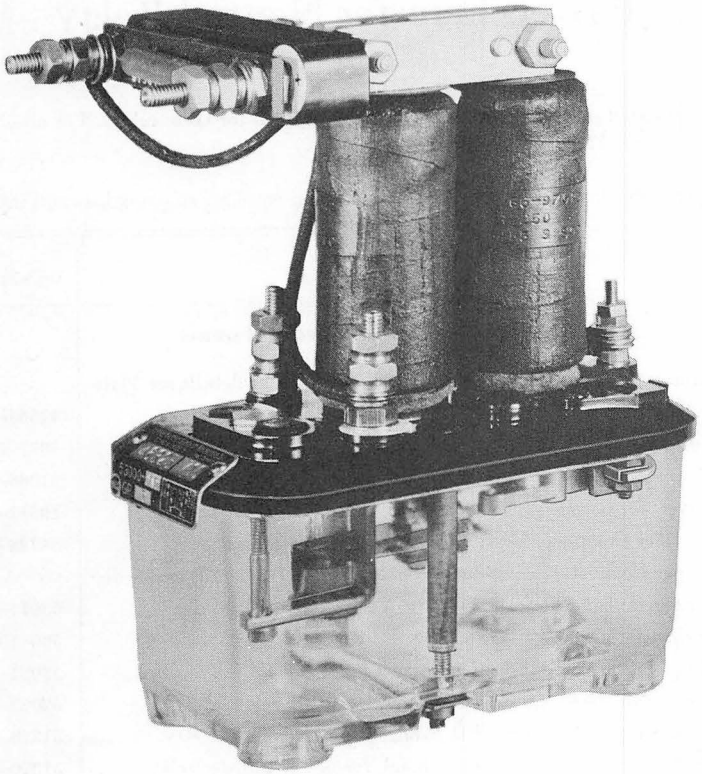
Size 6

NOTE: The detail parts shown on this plate are special for these relays. For all other details for these relays see Plate E2114.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Armature Complete, for power-transfer relay. For details see Plate E2114	42561–9 Gr. 7
1	Terminal Block, only, for relay	5971–24
2	Coil, for relay, specify resistance	31066–17
3	Cover, for power-transfer relay	29511–67
4	Rectifier Complete, for 10 volt power-transfer relay	54728–5 Gr. 1
5	Finger Complete, heavy-duty front and back, for details and order references see Plate E2345, Fig. V	53011–41 Gr. 10
6	Spring, for armature	586–107
7	Nut, No. 14-40 x 1/8" hex., for screw Fig. 8	53084–1
8	Screw, No. 14-40, for adjusting power-transfer relay	53089–2
9	Back Support Complete, left hand, for power-transfer relay	51320–5 Gr. 4
10	Back Support Complete, right hand, for power-transfer relay	51320–5 Gr. 3

PLATE E2153



Height—7⅝″ (without hanger)
Height—8¼″ (with hanger)
Width—3⅞″
Depth—6¼″

Type K, Direct-Current
Two-Rate Charge Control Neutral Relay
Size Two

April 1952 GENERAL RAILWAY SIGNAL COMPANY

Type K Direct-Current

Two-Rate Charge Control Neutral Relay

(For Lead Cells)

Size 2-1B

NOTE: This relay is always furnished with one independent back contact which is silver to silver.

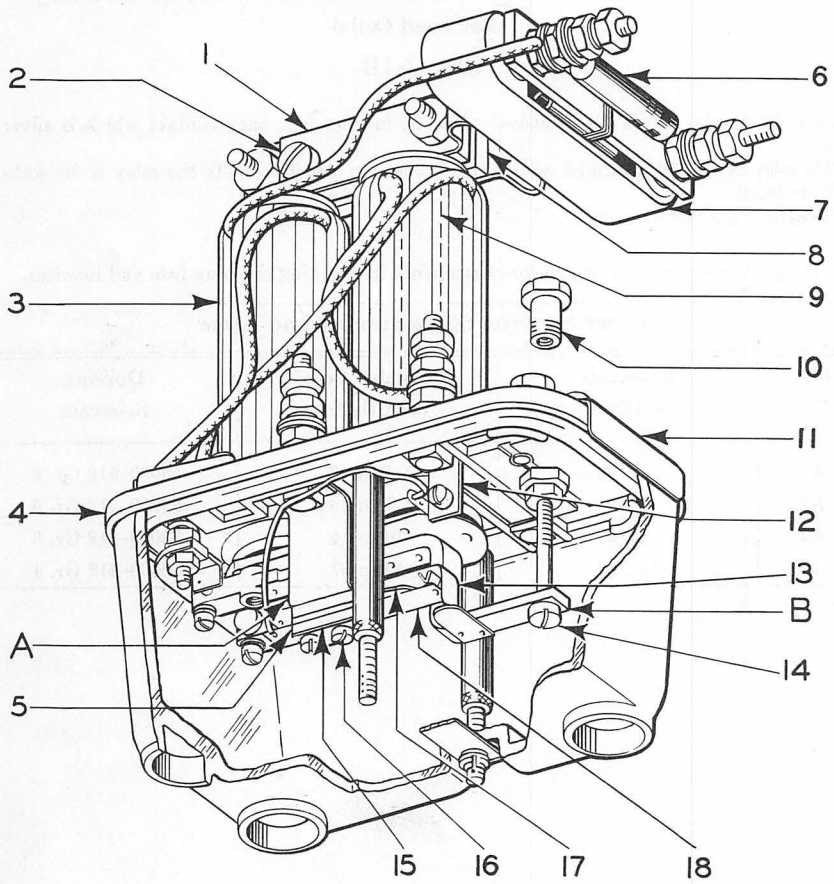
This relay is always furnished with a shock absorber which permits the relay to be wall- or shelf-mounted.

For details see Plate E2155.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Resistance in Ohms	Number Cells Lead Battery	Drawing Reference
A	710	4 to 6	53000–212 Gr. 2
A1	1110	7 to 10	53000–212 Gr. 5
A2	1575	10 to 14	53000–212 Gr. 3
A3	14215	50 to 57	53000–212 Gr. 4



For detail parts not shown here, see Plate E2106

Type K, Direct-Current
Two-Rate Charge Control Neutral Relay
Size Two

Type K Direct-Current

Two-Rate Charge Control Relay

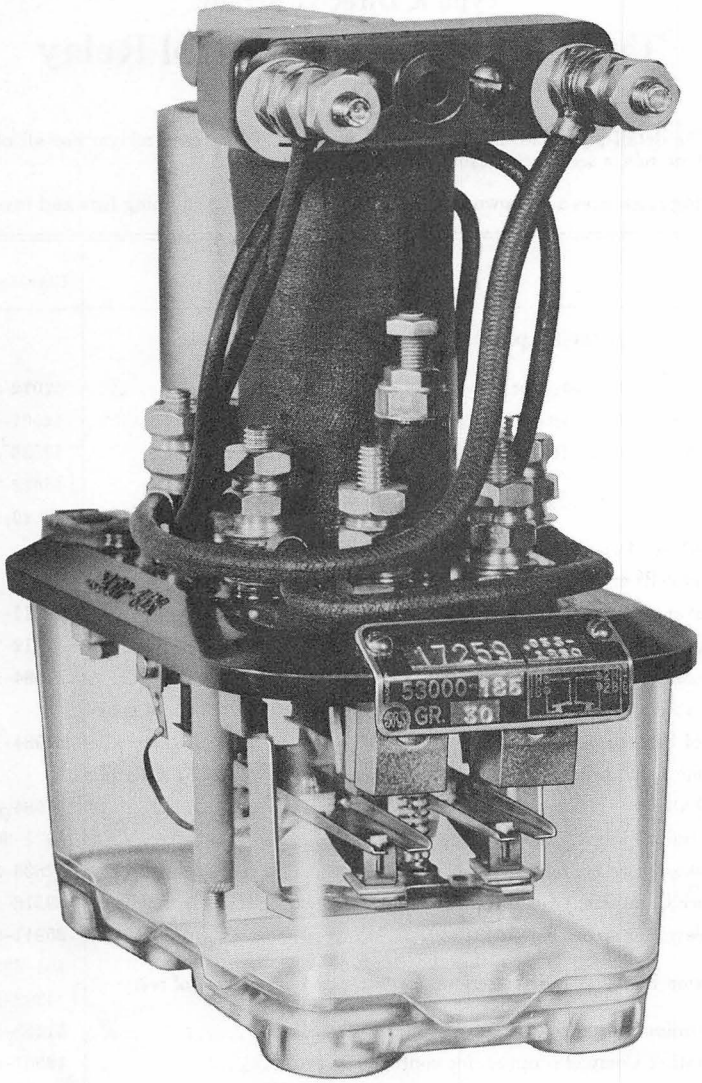
Size 2

NOTE: The detail parts shown on this plate are special for these relays. For all other detail parts for these relays see Plate E2106.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Contact Complete, for two-rate charge control relay	57072–1 Gr. 1
B	Armature Complete, for two-rate charge control relay	42561–25 Gr. 1
1	Yoke, for relay, for use in position shown	42836–32
2	Screw, ¼″-20 x ⅞″ fil. hd., with lock washer, for yokes	45572–7 53029–22
3	Coil, for two-rate charge control relay, specify resistance, number of cells and type of battery	
4	Cover, only, for two-rate charge control relay	29511–96
5	Insulation, for fingers	37412–73
6	Resistor, 205 ohms, for use with 4 to 6 cells of battery	57984–2 Gr. 1
6a	as above, except 220 ohms, for use with 7 to 10 and 10 to 14 cells of battery	57984–2 Gr. 2
6b	same as Fig. 6, except 865 ohms, for use with 50 to 57 cells of battery	57984–3 Gr. 1
7	Terminal Block, only	5971–36
8	Yoke, for relay, for use in position shown	42836–31
9	Core Complete, adjustable, for relay	29516–15 Gr. 1
10	Sleeve, for screw Fig. 14	30911–9
11	Name Plate, with drive screws, for two-rate charge control relay	401–633 54392–1
12	Terminal, for relay	51559–5
13	Contact Complete, upper, for contact Fig. A	13061–56 Gr. 2
14	Screw, No. 10-32 x 2″ fil. hd., used as stop for armature	12563–52
15	Washer, for contacts	22543–25
16	Screw, No. 6-32 x ⅝″ fil. hd., with hex. nut and lock washer, for contacts	3931–12 37404–2 53029–26
17	Stop, for contacts	55861–6
18	Contact Complete, lower, for contact Fig. A	13061–54 Gr. 1

PLATE E2157



Height—7⅝″ (without hanger)
Height—8¼″ (with hanger)
Width—3⅞″
Depth—6¼″

Type K, Direct-Current
Overload Neutral Relay
Size Two

Type K Direct-Current

Overload Neutral Relay

Size 2-2FB or 2B

NOTE: This relay can be furnished with two dependent front and back or two independent back contacts. Contacts are silver to silver front and back.

This relay is always furnished with a shock absorber which permits the relay to be wall- or shelf-mounted.

For details see Plate E2159.

Drawing references are shown for convenience in checking shipping lists and invoices.

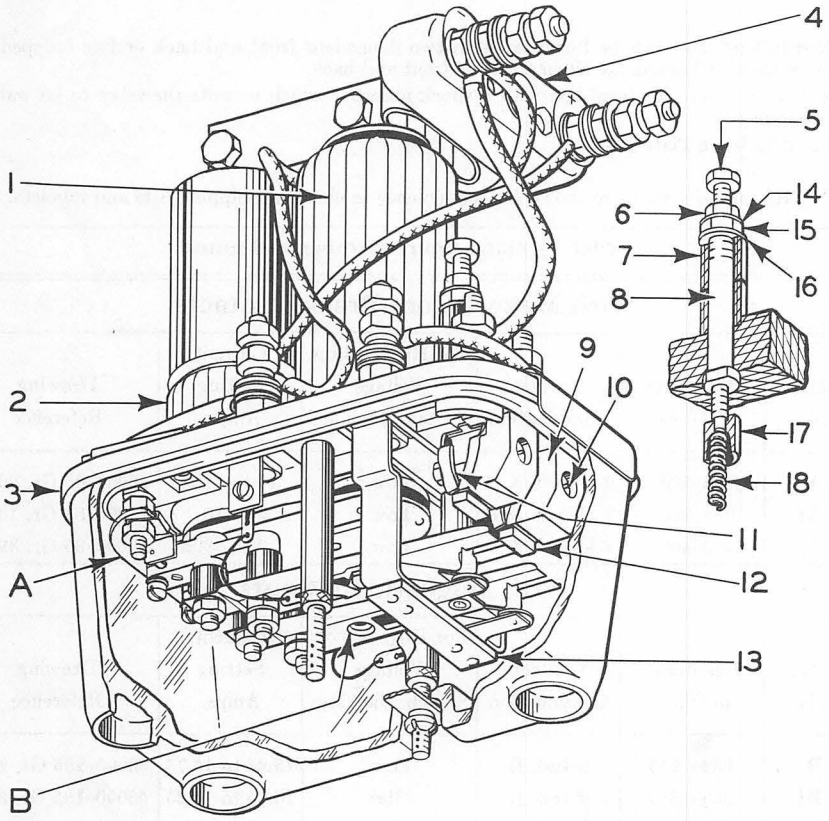
Order by plate, figure number and name

With Make-Before-Break Contacts

Fig. No.	Resistance in Ohms	Contact Combination	For High or Low Voltage Switch Machines	Current Setting Amps.	Drawing Reference
A	.053–200	2 Dep. F & B	Low	11 to 11.5	53000–85 Gr. 96
A1	.053–260	2 Dep. F & B	Low	9 to 10	53000–85 Gr. 103
A2	.053–400	2 Dep. F & B	Low	9 to 9.25	53000–85 Gr. 89

With Magnetic Blowouts

Fig. No.	Resistance in Ohms	Contact Combination	For High or Low Voltage Switch Machines	Current Setting Amps.	Drawing Reference
B	.053– 250	2 Ind. B	Low	15.25 to 15.75	53000–285 Gr. 20
B1	.053–1850	2 Ind. B	High	10.75 to 11.25	53000–185 Gr. 30
B2	.270–1850	2 Ind. B	High	1.9 to 2.0	53000–185 Gr. 57



For detail parts not shown here, see Plate E2106

Type K, Direct-Current
Overload Neutral Relay
Size Two

April 1952 GENERAL RAILWAY SIGNAL COMPANY

Type K Direct-Current

Overload Neutral Relay

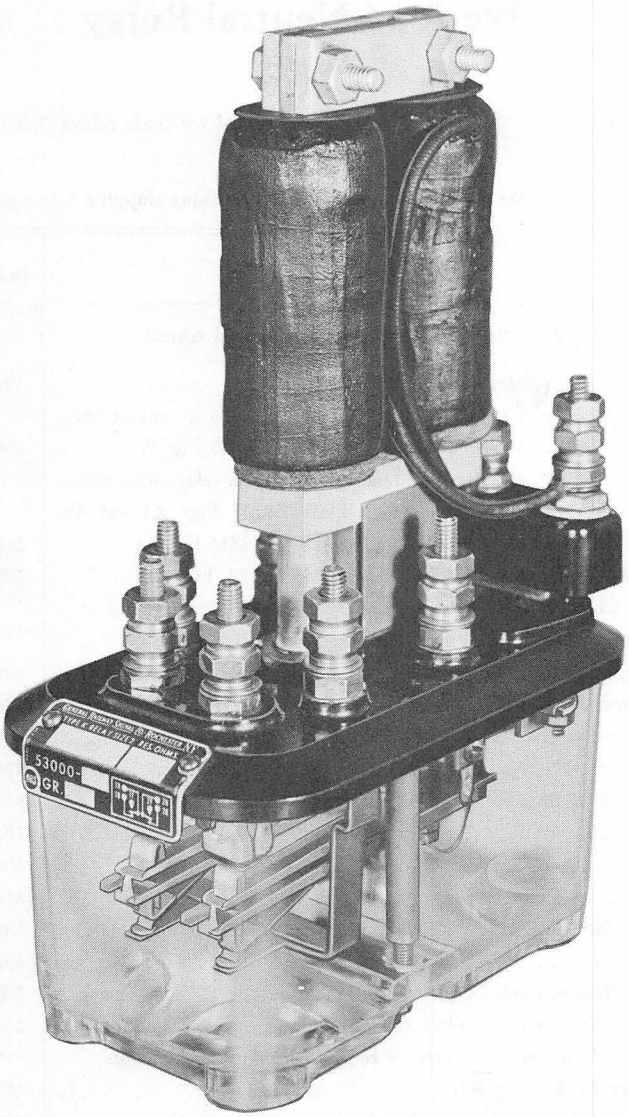
Size 2

NOTE: The detail parts shown on this plate are special for these relays. For all other detail parts for these relays see Plate E2106.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Armature Complete, for overload relay	42561–16 Gr. 2
B	Finger Complete, articulated, with heavy-duty back contact only. For details and order references see Plate E2345 Fig. W	53011–41 Gr. 15
B1	as above, except with front and back contacts, for relays with make-before-break contacts shown on Plate E2157 Figs. A1 and A2. For details and order references see Plate E2345 Fig. A1	53011–42 Gr. 8
B2	as above, except for relay shown on Plate E2157, Fig. A	53011–42 Gr. 3
1	Front Coil, for overload relay, specify resistance	
2	Coil, short, for overload relay, specify resistance	
3	Cover, only, for overload relay	29511–57
4	Terminal Block Complete, 2 posts, for overload relay	46048–10 Gr. 3
4a	as above, except 3 posts, for overload relay	46048–10 Gr. 4
5	Stud Complete, No. 10-32, with hex. nut, for adjustment	29519–2 Gr. 2
6	Nut, No. 10-32 x $\frac{1}{8}$″ tk., hex., for stud	40796
7	Bushing, for stud	7350–113
8	Sleeve, for stud	30911–7
9	Magnet, for magnetic blowout	57157
10	Screw, No. 6-32 x $1\frac{1}{16}$″ fil. hd., with hex. nuts, for magnets and holders	55159–13 49227–2
11	Front Holder, steel, for block Fig. 12	53018–7
12	Block, filler, for use in place of front contact	54263–1
13	Support Complete, for overload relay with magnetic blowouts	51320–40 Gr. 4
14	Washer, for nut Fig. 6	40791
15	Nut, $\frac{3}{8}$″-24 x $\frac{3}{16}$″ tk., hex., for sleeve	35614–2
16	Washer, for nut Fig. 15	16538–3
17	Spring Seat, for spring Fig. 18	56176–9
18	Spring, for overload relay	586–135
18a	as above, except for overload relay shown on Plate E2157 Fig. B	586–61

PLATE E2161



Height—9 3/8″ (without hanger)
Height— 10″ (with hanger)
Width—3 7/8″
Depth—6 1/4″

Type K, Direct-Current
Biased-Neutral Relay
Size Two

Type K Direct-Current

Biased-Neutral Relay

Size 2-2FB

NOTE: This relay is always furnished with two dependent front and back contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

This relay is always furnished with a shock absorber which permits the relay to be wall- or shelf-mounted.

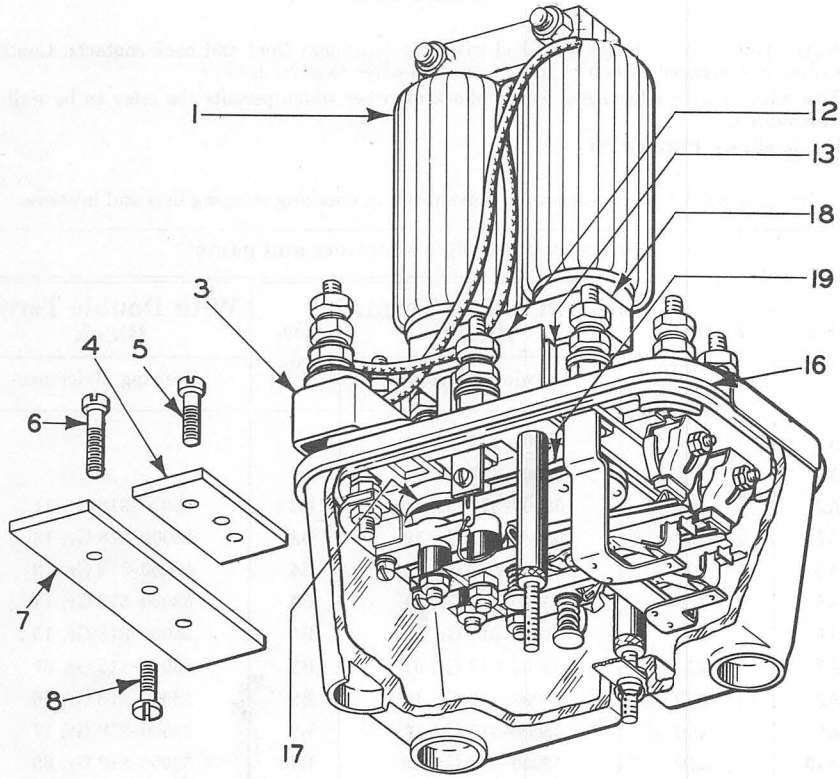
For details see Plate E2163.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Resistance in Ohms	With Single Term. Block — Drawing Reference	Fig. No.	With Double Term. Block — Drawing Reference
A	2	53000–317 Gr. 2	....	.....
A1	4	53000–317 Gr. 4	....	.....
A2	50	53000–317 Gr. 11	B2	53000–318 Gr. 11
A3	60	53000–317 Gr. 12	B3	53000–318 Gr. 12
A4	100	53000–317 Gr. 13	B4	53000–318 Gr. 13
A5	150	53000–317 Gr. 14	B5	53000–318 Gr. 14
A6	200	53000–317 Gr. 15	B6	53000–318 Gr. 15
A7	250	53000–317 Gr. 61	B7	53000–318 Gr. 61
A8	300	53000–317 Gr. 16	B8	53000–318 Gr. 16
A9	400	53000–317 Gr. 17	B9	53000–318 Gr. 17
A10	450	53000–317 Gr. 63	B10	53000–318 Gr. 63
A11	500	53000–317 Gr. 18	B11	53000–318 Gr. 18
A12	600	53000–317 Gr. 19	B12	53000–318 Gr. 19
A13	750	53000–317 Gr. 20	B13	53000–318 Gr. 20
A14	800	53000–317 Gr. 21	B14	53000–318 Gr. 21
A15	1000	53000–317 Gr. 22	B15	53000–318 Gr. 22
A16	1500	53000–317 Gr. 24	B16	53000–318 Gr. 24
A17	2000	53000–317 Gr. 25	B17	53000–318 Gr. 25
A18	13240	53000–317 Gr. 62	B18	53000–318 Gr. 62

GENERAL RAILWAY SIGNAL COMPANY April 1952



For detail parts not shown here, see Plate E2106

Type K, Direct-Current
Biased-Neutral Relay
Size Two

April 1952 GENERAL RAILWAY SIGNAL COMPANY

Type K Direct-Current

Biased-Neutral Relay

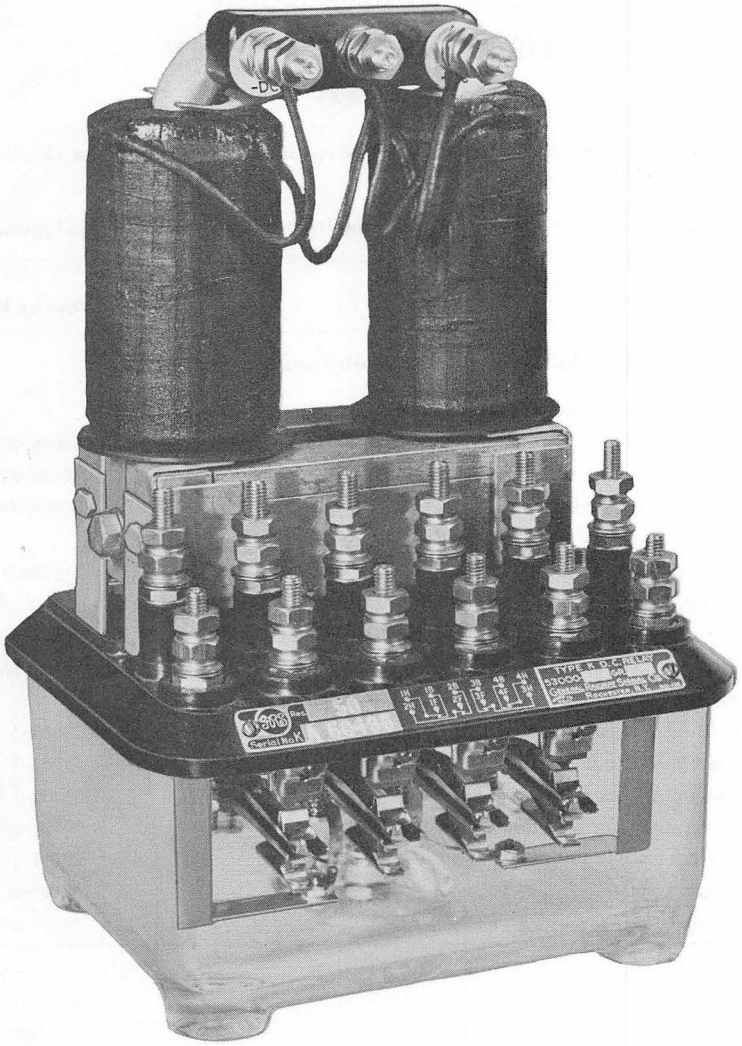
Size 2

NOTE: The detail parts shown on this plate are special for these relays. For all other detail parts see Plate E2106.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
1	Coil, for biased-neutral relay, specify resistance	
3	Terminal Block Complete, with three terminal posts	46048–8 Gr. 10
3a	as above, except with four terminal posts	46048–37 Gr. 1
4	Support, for terminal block Fig. 3	35468–24
5	Screw, No. 10-32 x ¾″ fil. hd., for mounting terminal block Fig. 3 to support Fig. 4	12563–5
6	Screw, No. 10-32 x ½″ fil. hd., for mounting terminal block Fig. 3a to support Fig. 7	12563–1
7	Support, for terminal block Fig. 3a	35468–25
8	Screw, No. 10-32 x 9/16″ binding head, for mounting supports Figs. 4 and 7 to cover of relay	58163–4
12	Clamp, for magnet	58967–1
13	Magnet, for biased-neutral relay	53007–15
16	Cover, only, for biased-neutral relay	29511–98
17	Core, for use in position shown	29514–169
18	Shunt Strip,	58898–5
19	Core, for use in position shown	29516–23 Gr. 1

PLATE E2165



Height—11¼″
Width—7⅜″
Depth—6⅜″

Type K, Direct-Current
Biased-Neutral Relay
Size Four

April 1952 GENERAL RAILWAY SIGNAL COMPANY

Type K Direct-Current

Biased-Neutral Relay

WITH SINGLE TERMINAL BLOCK

Size 4-4FB

NOTE: This relay is always furnished with four dependent front and back contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

The partial slow release relays shown on following page have approximately 0.25 second release time.

This relay may be wall- or shelf-mounted, when wall mounting a combination bracket shown on Page 213, Fig. W is required.

For mounting centers see Plate E2349.

For details see Plate E2167.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.			
With Combination Bracket "W" Page 213	With Shelf Plate "Z" Page 213	Resistance of Relay—Ohms	Drawing Reference
A	B	2	53000–307 Gr. 2
A1	B1	4	53000–307 Gr. 3
A2	B2	50	53000–307 Gr. 6
A3	B3	100	53000–307 Gr. 7
A4	B4	136	53000–307 Gr. 8
A5	B5	200	53000–307 Gr. 9
A6	B6	250	53000–307 Gr. 10
A7	B7	300	53000–307 Gr. 11
A8	B8	400	53000–307 Gr. 12
A9	B9	450	53000–307 Gr. 13
A10	B10	500	53000–307 Gr. 15
A11	B11	670	53000–307 Gr. 16
A12	B12	750	53000–307 Gr. 17
A13	B13	1000	53000–307 Gr. 18
Partial Slow Release			
A50	B50	100	53000–307 Gr. 26
A51	B51	200	53000–307 Gr. 27
A52	B52	300	53000–307 Gr. 28
A53	B53	320	53000–307 Gr. 29
A54	B54	450	53000–307 Gr. 30
A55	B55	740	53000–307 Gr. 31

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Direct-Current

Biased-Neutral Relay

WITH DOUBLE TERMINAL BLOCK

Size 4-4FB

NOTE: This relay is always furnished with four dependent front and back contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

This relay may be wall- or shelf-mounted when wall mounting, a combination bracket shown on Page 213, Fig. W is required.

For mounting centers see Plate E2349.

For details see Plate E2167

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.		Resistance of Relay—Ohms	Drawing Reference
With Combination Bracket "W" Page 213	With Shelf Plate "Z" Page 213		
C	D	50	53000–308 Gr. 6
C1	D1	66	53000–308 Gr. 20
C2	D2	100	53000–308 Gr. 7
C3	D3	136	53000–308 Gr. 8
C4	D4	150	53000–308 Gr. 19
C5	D5	200	53000–308 Gr. 9
C6	D6	250	53000–308 Gr. 10
C7	D7	300	53000–308 Gr. 11
C8	D8	400	53000–308 Gr. 12
C9	D9	450	53000–308 Gr. 13
C10	D10	500	53000–308 Gr. 15
C11	D11	670	53000–308 Gr. 16
C12	D12	750	53000–308 Gr. 17
C13	D13	1000	53000–308 Gr. 18

April 1952 GENERAL RAILWAY SIGNAL COMPANY

Type K Direct-Current

Biased-Neutral Relay
Heavy-Duty with Magnetic Blowouts
WITH SINGLE TERMINAL BLOCK
Size 4-4FB

NOTE: This relay is always furnished with four dependent front and back contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

Standard relay is furnished with magnetic blowouts on all front contacts. If relay is required with fewer magnetic blowouts, kindly consult our nearest district office for information.

This relay may be wall- or shelf-mounted, when wall mounting, a combination bracket shown on Page 213, Fig. W is required.

For mounting centers see Plate E2349.

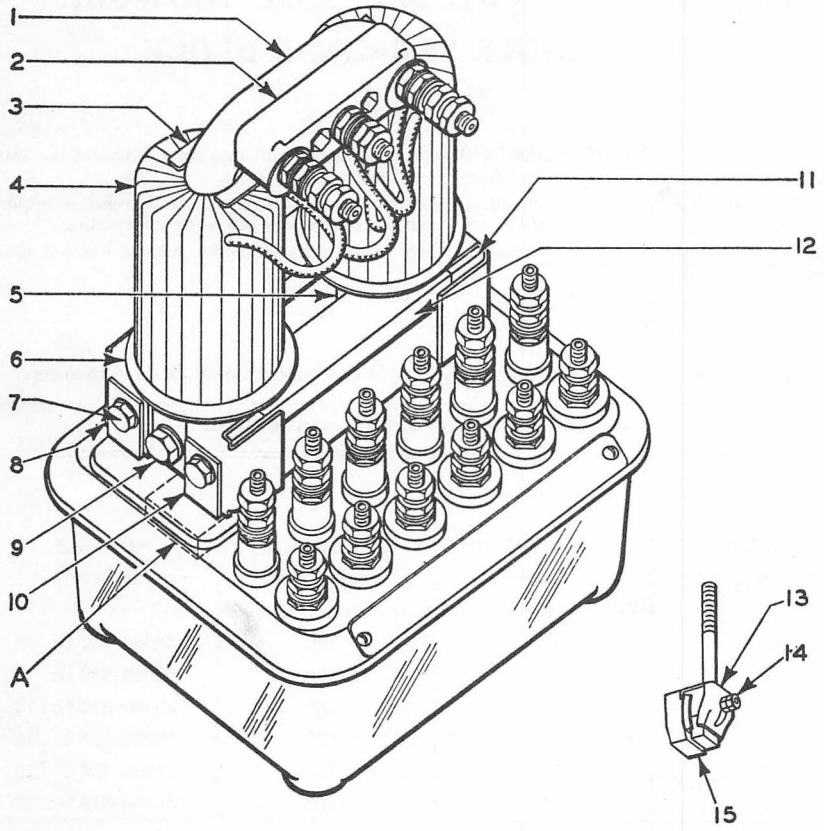
For details see Plate E2167.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.		Resistance of Relay—Ohms	Drawing Reference
With Combination Bracket "W" Page 213	With Shelf Plate "Z" Page 213		
E	F	400	53000–312 Gr. 12
E1	F1	450	53000–312 Gr. 13
E2	F2	500	53000–312 Gr. 14
E3	F3	670	53000–312 Gr. 15
E4	F4	750	53000–312 Gr. 16
E5	F5	1000	53000–312 Gr. 17

GENERAL RAILWAY SIGNAL COMPANY April 1952



For detail parts not shown here, see Plate E2110

Type K, Direct-Current
Biased-Neutral Relay
Size Four

Type K Direct-Current

Biased-Neutral Relay

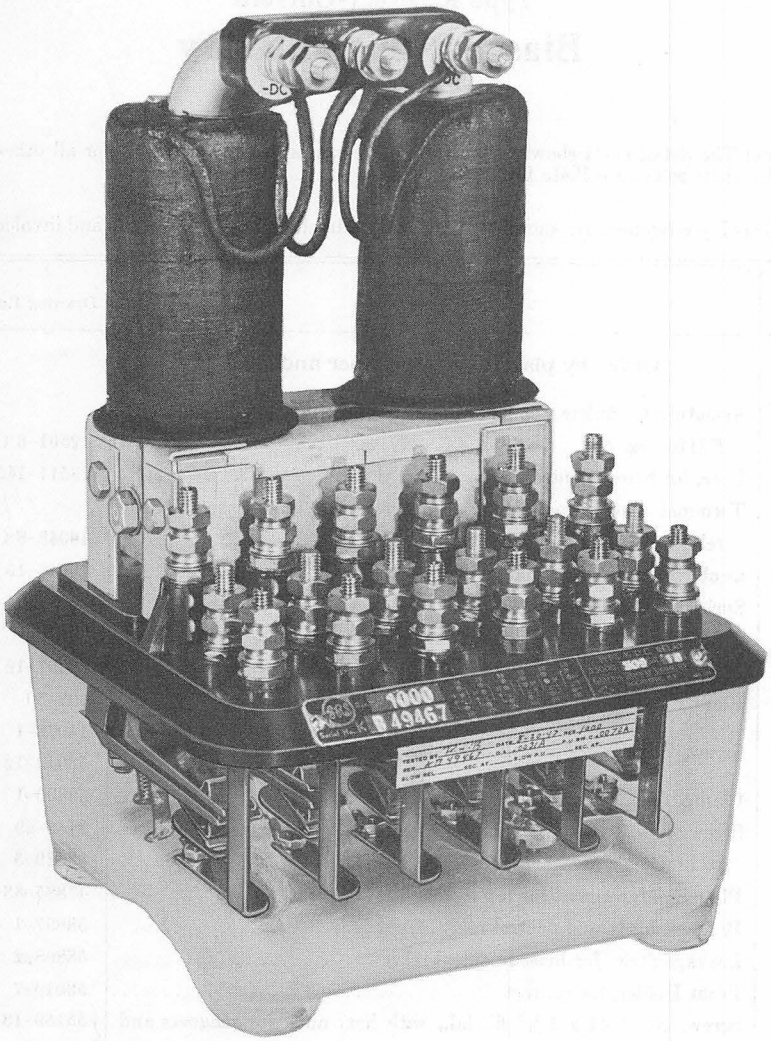
Size 4

NOTE: The detail parts shown on this plate are special for these relays. For all other detail parts for these relays see Plate E2110.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Armature Complete, for biased-neutral relay. For details see Plate E2110 Fig. A	42561-6 Gr. 6
1	Core, for biased-neutral relay	29514-145
2	Terminal Block Complete, with three posts, for biased-neutral relay	46048-8 Gr. 10
2a	as above, except with four posts	46048-15 Gr. 9
3	Spring, for top of coils	16111-91
4	Coil, for biased-neutral relay, specify resistance	
5	Magnet, for biased-neutral relay	53007-12
6	Fibre Washer, for use under coils	493-39
7	Screw, $\frac{1}{4}$″-20 x $\frac{1}{2}$″ hex. hd. with lock washer for clamp and plate	14078-1 53029-12
8	Clamp, for magnets	58896-1
9	Screw, $\frac{5}{16}$″-18 x $1\frac{3}{4}$″ hex. hd., with lock washer, for fastening cores to bracket	3440-29 53029-5
10	Plate, reinforcement for top of relay	41885-83
11	Bracket, for biased-neutral relay	58897-1
12	Leakage Strip, for biased-neutral relay	58898-2
13	Front Holder, for contact	53018-7
14	Screw, No. 6-32 x $1\frac{1}{16}$″ fil. hd., with hex. nuts, for magnets and holders	55159-13 49227-2
15	Magnet, for magnetic blowout	57157

PLATE E2169



Height—11⅜″
Width—7 11/16″
Depth—7¼″

Type K, Direct-Current
Biased-Neutral Relay
Size Six

Type K Direct-Current

Biased-Neutral Relay

WITH SINGLE TERMINAL BLOCK

Size 6-6FB

NOTE: This relay is always furnished with six dependent front and back contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

The partial slow release relays shown on following page have approximately 0.25 second release time.

This relay may be wall- or shelf-mounted, when wall mounting a special bracket as shown on Page 213, Fig. W is required.

For mounting centers see Plate E2349.

For details see Plate E2171.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.		Resistance of Relay—Ohms	Drawing Reference
With Combination Bracket "W" Page 213	With Shelf Plate "Z" Page 213		
A	B	2	53000–309 Gr. 2
A1	B1	4	53000–309 Gr. 3
A2	B2	50	53000–309 Gr. 6
A3	B3	66	53000–309 Gr. 20
A4	B4	100	53000–309 Gr. 7
A5	B5	136	53000–309 Gr. 8
A6	B6	150	53000–309 Gr. 19
A7	B7	200	53000–309 Gr. 9
A8	B8	250	53000–309 Gr. 10
A9	B9	300	53000–309 Gr. 11
A10	B10	400	53000–309 Gr. 12
A11	B11	450	53000–309 Gr. 13
A12	B12	500	53000–309 Gr. 15
A13	B13	670	53000–309 Gr. 16
A14	B14	750	53000–309 Gr. 17
A15	B15	1000	53000–309 Gr. 18

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY April 1952

Type K Direct-Current

Biased-Neutral Relay

WITH SINGLE TERMINAL BLOCK

Size 6-6FB

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.			
With Combination Bracket "W" Page 213	With Shelf Plate "Z" Page 213	Resistance of Relay—Ohms	Drawing Reference
Partial Slow Release			
A50	**B50**	100	53000–309 Gr. 26
A51	**B51**	200	53000–309 Gr. 27
A52	**B52**	300	53000–309 Gr. 28
A53	**B53**	320	53000–309 Gr. 29
A54	**B54**	450	53000–309 Gr. 30
A55	**B55**	740	53000–309 Gr. 31

Type K Direct-Current

Biased Neutral Relay

WITH DOUBLE TERMINAL BLOCK

Size 6-6FB

NOTE: This relay is always furnished with six dependent front and back contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

This relay may be wall- or shelf-mounted, when wall mounting a special bracket as shown on Page 213, Fig. W is required.

For mounting centers see Plate E2349.

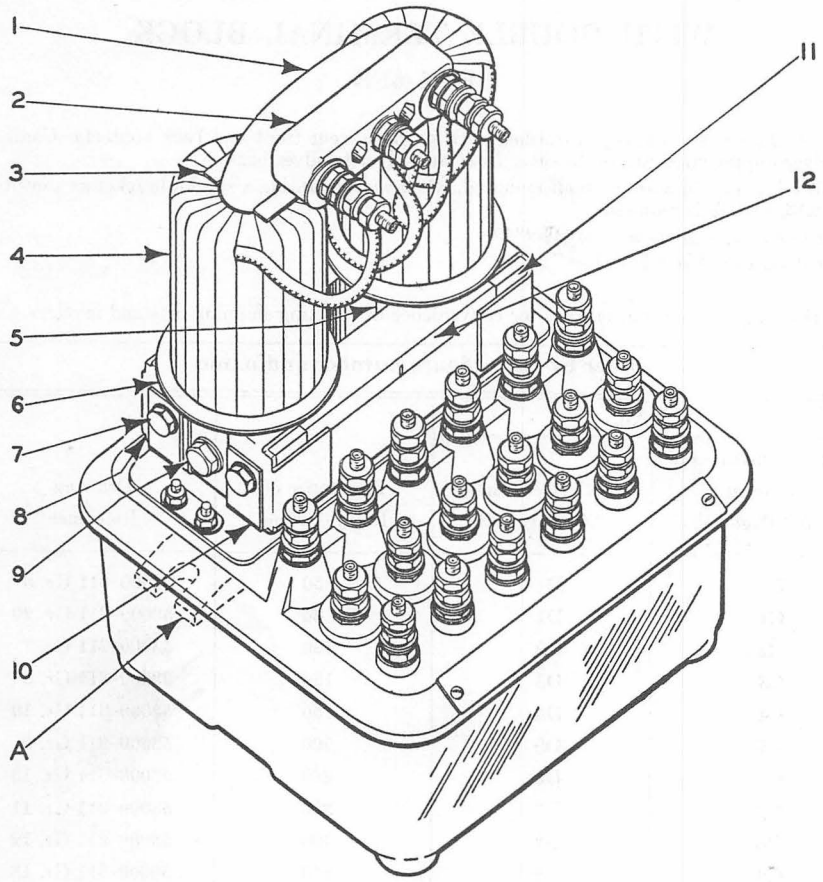
For details see Plate E2171.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.		Resistance of Relay—Ohms	Drawing Reference
With Combination Bracket "W" Page 213	With Shelf Plate "Z" Page 213		
C	D	50	53000–311 Gr. 6
C1	D1	66	53000–311 Gr. 20
C2	D2	100	53000–311 Gr. 7
C3	D3	136	53000–311 Gr. 8
C4	D4	150	53000–311 Gr. 19
C5	D5	200	53000–311 Gr. 9
C6	D6	250	53000–311 Gr. 10
C7	D7	300	53000–311 Gr. 11
C8	D8	400	53000–311 Gr. 12
C9	D9	450	53000–311 Gr. 13
C10	D10	500	53000–311 Gr. 15
C11	D11	670	53000–311 Gr. 16
C12	D12	750	53000–311 Gr. 17
C13	D13	1000	53000–311 Gr. 18

GENERAL RAILWAY SIGNAL COMPANY April 1952



For detail parts not shown here, see Plate E2114

Type K, Direct-Current
Biased-Neutral Relay
Size Six

April 1952 GENERAL RAILWAY SIGNAL COMPANY

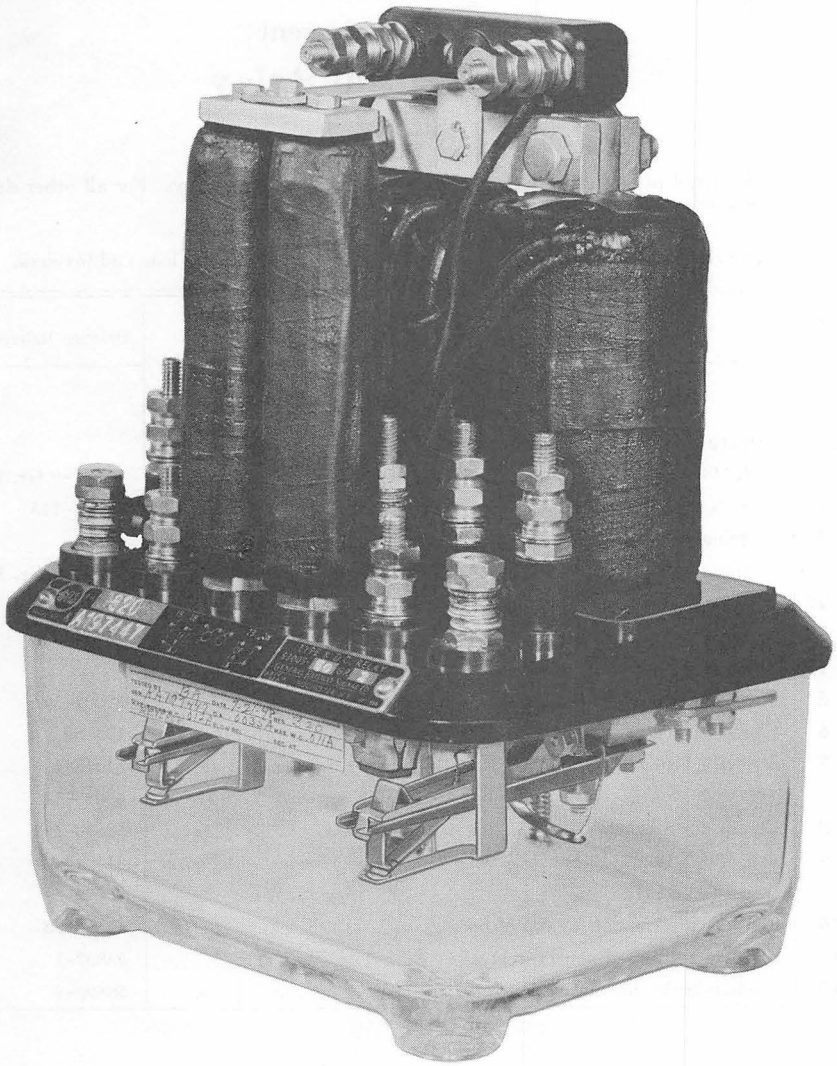
Type K Direct-Current
Biased-Neutral Relay
Size 6

NOTE: The detail parts shown on this plate are special for these relays. For all other detail parts for these relays see Plate E2114.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Armature Complete, for biased-neutral relay. For details see Plate E2114	42561–9 Gr. 10
1	Core, for relay	29514–145
2	Terminal Block Complete, with three posts, for biased-neutral relay	46048–8 Gr. 10
2a	as above, except with four posts	46048–15 Gr. 9
3	Spring, for top of coils	16111–91
4	Coil, for relay, specify resistance	
5	Magnet, for biased-neutral relay	53007–12
6	Fibre Washer, for use under coils	493–39
7	Screw, ¼″-20 x ½″ hex. hd., with lock washer, for clamp	14078–1 53029–12
8	Clamp, for magnets	58896–1
9	Screw, $\frac{5}{16}$″-18 x 1¾″ hex. hd., with lock washer, for fastening cores to bracket	3440–29 53029–5
10	Plate, reinforcement for top of relay	41885–83
11	Bracket, for biased-neutral relay	58897–1
12	Leakage Strip, for biased-neutral relay	58898–2

PLATE E2173



Height—9 9/16″
Width—7 3/8″
Depth—6 3/8″

Type K, Direct-Current
Retained-Neutral Line Relay
Size Four

April 1952 GENERAL RAILWAY SIGNAL COMPANY

Type K Direct-Current

Retained-Neutral Line Relay

Size 4-2 Way-2FB

NOTE: This relay is always furnished with two dependent front and back contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.

For mounting centers see Plate E2349.

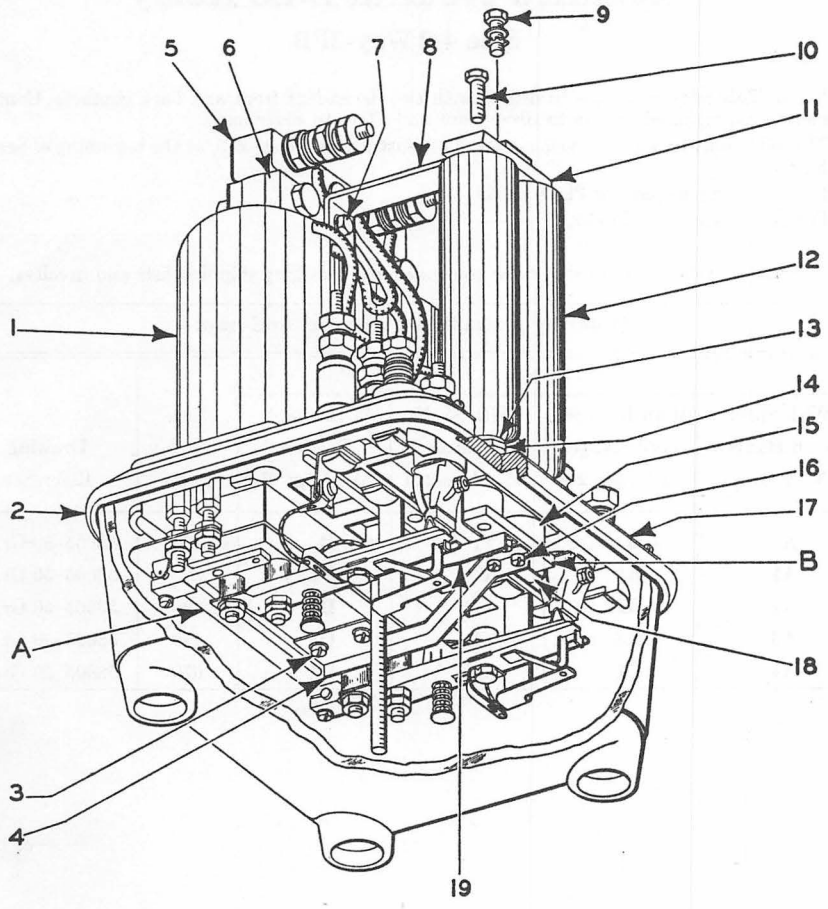
For details see Plate E2175.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.				Res. of Relay Ohms	Drawing Reference
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213		
A	B	C	D	100	53005–50 Gr. 5
A1	B1	C1	D1	200	53005–50 Gr. 4
A2	B2	C2	D2	320	53005–50 Gr. 2
A3	B3	C3	D3	480	53005–50 Gr. 3
A4	B4	C4	D4	670	53005–50 Gr. 6

GENERAL RAILWAY SIGNAL COMPANY April 1952



For detail parts not shown here, see Plate E2110

Type K, Direct-Current
Retained-Neutral Relay
Size Four

Type K Direct-Current

Retained-Neutral Relay

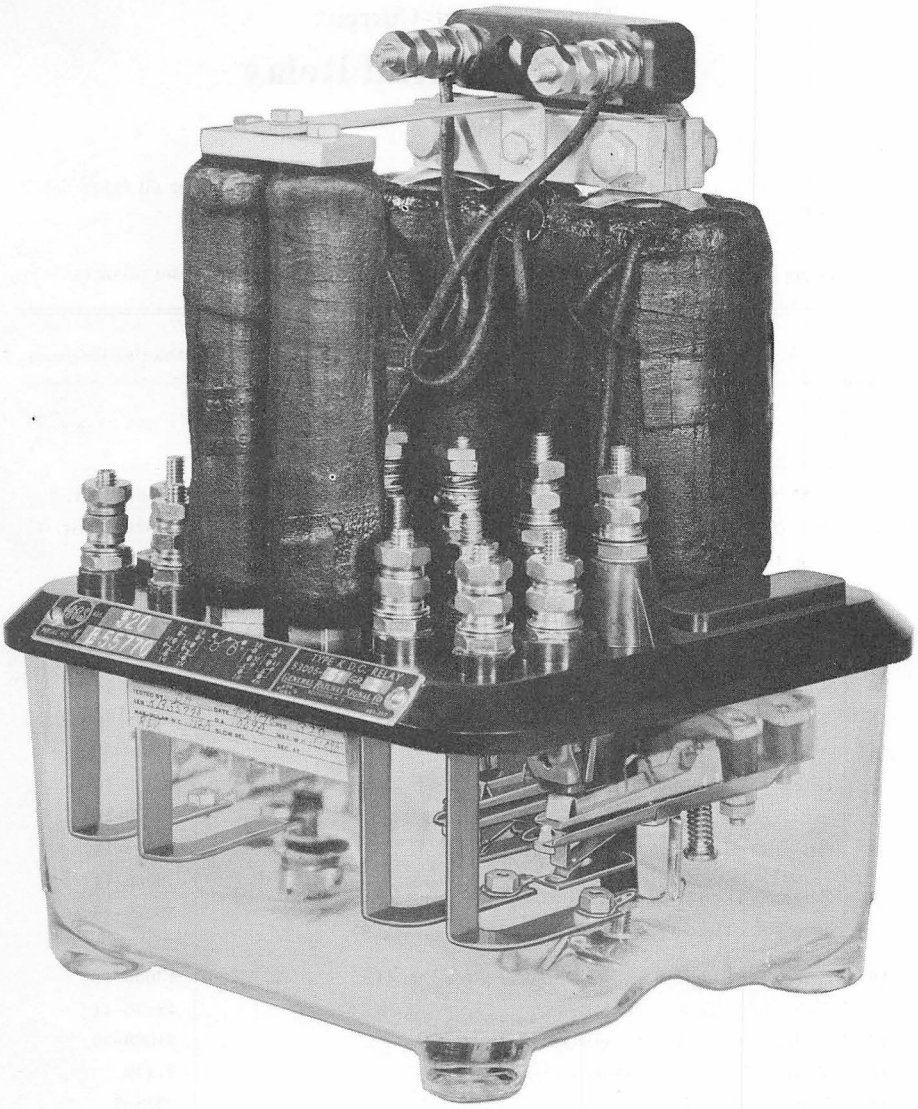
Size 4

NOTE: The detail parts shown on this plate are special for these relays. For all other detail parts for these relays see Plate E2110.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Armature Complete, neutral, for details and order references see Plate E2110	42561–6 Gr. 3
B	Armature Complete, retained-neutral	29524–18 Gr. 3
1	Coil, for relay, specify resistance	
2	Cover, for relay	29511–94
3	Screw, No. 10-32 x $\frac{5}{16}$″ fil. hd., with lock washer, for fastening retaining armature to neutral armature	53348–1 53029–3
4	Support, right hand, for armature	29522–18
5	Terminal Block Complete, with two posts	46048–10 Gr. 3
6	Yoke, drilled for screw Fig. 7	42836–40
7	Screw, No. 10-32 x $\frac{5}{8}$″ hex. hd., with lock washer, for fastening bracket Fig. 8 to yoke	13006–16 53029–18
8	Bracket, reinforcement between coils	49092–147
9	Screw, No. 10-32 x $\frac{3}{8}$″ hex. hd., with washers, for fastening bracket to yoke Fig. 11	13006–14 53029–18 5046–5
10	Screw, No. 10-32 x $\frac{5}{8}$″ hex. hd., for yoke Fig. 11	13006–16
11	Yoke, for coils Fig. 12	42836–41
12	Coil, for relay, specify resistance	31066–99
13	Washer, felt, for use under coils Fig. 12	21119
14	Nut, $\frac{1}{2}$″-32 x $\frac{5}{32}$″, for cores	6358–5
15	Core, for coils Fig. 12	29514–122
16	Screw, No. 4-36, for fastening supports to armature	37696–4
17	Name Plate, with drive screws, for relay	401–284 54392–1
18	Back Stop, for retaining armature	55068
19	Support, left hand, for armature	29522–17

PLATE E2177



Height—10 1/16″
Width—7 11/16″
Depth—7 1/4″

Type K, Direct-Current
Retained-Neutral Line Relay
Size Six

April 1952 GENERAL RAILWAY SIGNAL COMPANY

Type K Direct-Current

Retained-Neutral Line Relay

Size 6-4 Way-4FB

NOTE: This relay is always furnished with four dependent front and back contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.

For mounting centers see Plate E2349.

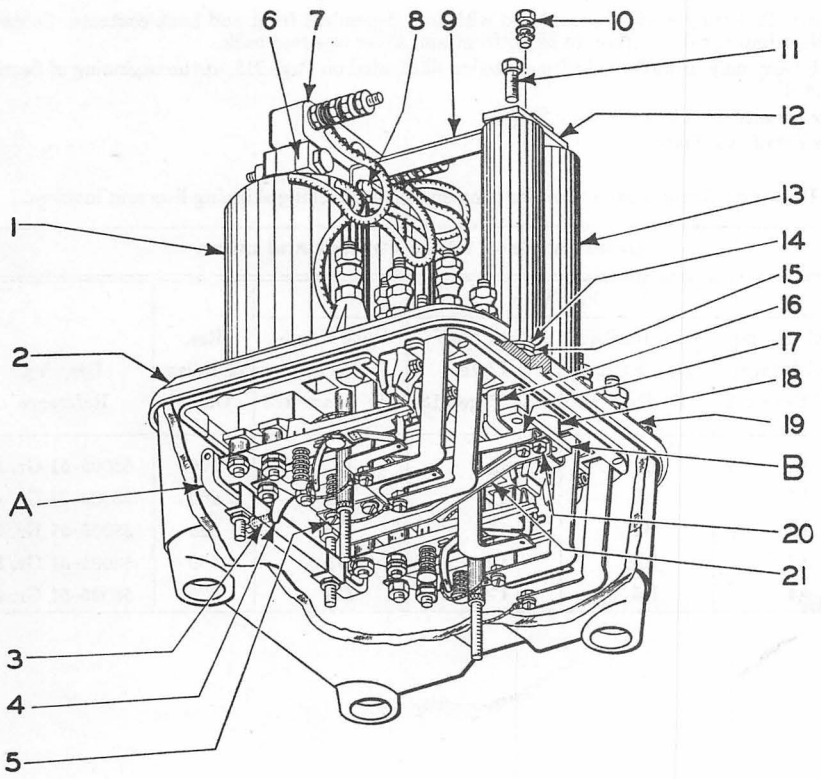
For details see Plate E2179.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.				Res. of Relay Ohms	Drawing Reference
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213		
A	B	C	D	100	53005–51 Gr. 5
A1	B1	C1	D1	200	53005–51 Gr. 4
A2	B2	C2	D2	320	53005–51 Gr. 2
A3	B3	C3	D3	480	53005–51 Gr. 3
A4	B4	C4	D4	670	53005–51 Gr. 6

GENERAL RAILWAY SIGNAL COMPANY April 1952



For detail parts not shown here, see Plate E2114.

Type K, Direct-Current
Retained-Neutral Relay
Size 6

April 1952 GENERAL RAILWAY SIGNAL COMPANY

Type K Direct-Current

Retained-Neutral Relay

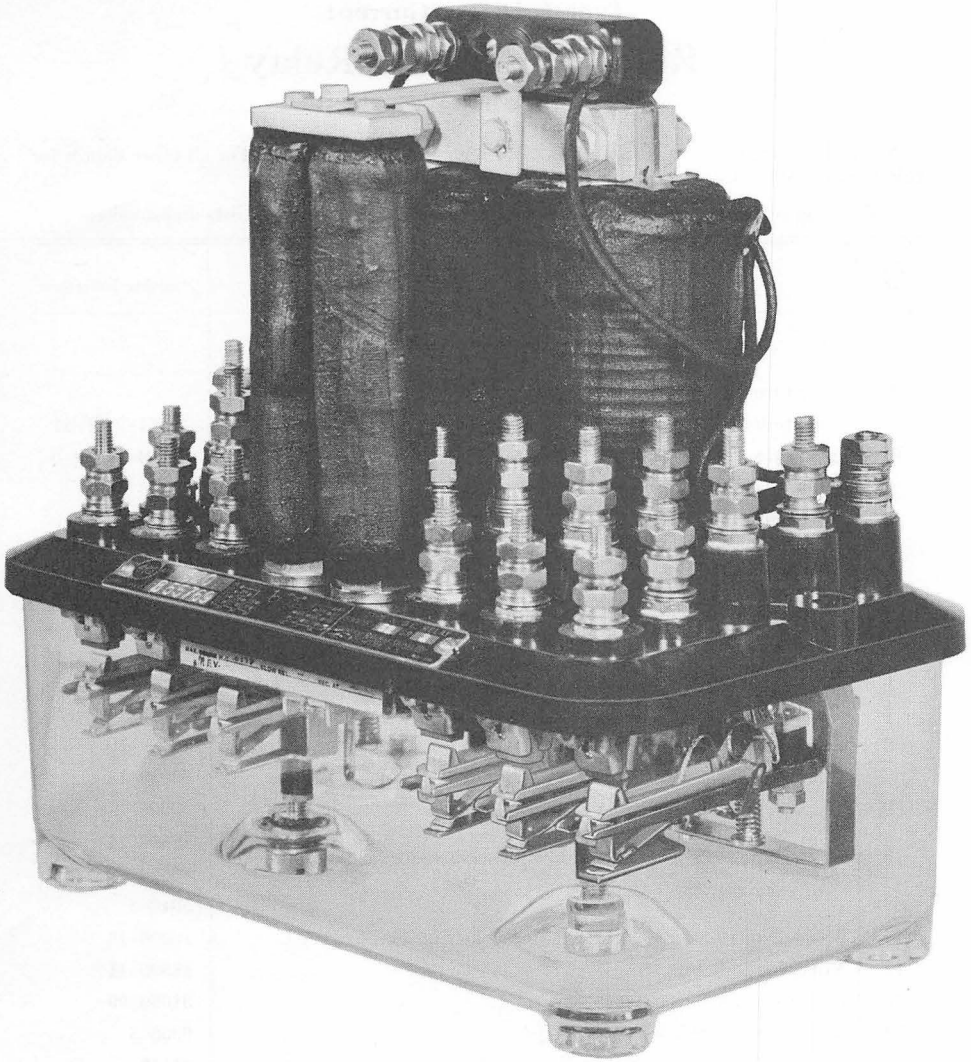
Size 6-4 Way

NOTE: The detail parts shown on this plate are special for this relay. For all other details for this relay see Plate E2114.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Armature Complete, neutral, for details and order references see Plate E2114	42561-9 Gr. 11
B	Armature Complete, retained-neutral	29524-17 Gr. 3
1	Coil, for relay, specify resistance	
2	Cover, for relay	29511-13
3	Screw, No. 10-32 headless, for spring Fig. 4	20360-2
4	Spring, for armature	16111-90
5	Screw, No. 10-32 x 5/16" fil. hd., with lock washer, for fastening retaining armature to neutral armature	53348-1 53029-3
6	Yoke, drilled for screw Fig. 8	42836-40
7	Terminal Block Complete, with two posts	46048-10 Gr. 3
8	Screw, No. 10-32 x 5/8" hex. hd., with lock washer, for fastening bracket Fig. 9 to yoke	13006-16 53029-18
9	Bracket, reinforcement between coils	49092-148
10	Screw, No. 10-32 x 3/8" hex. hd., with washers for fastening bracket to yoke Fig. 12	13006-14 53029-18 5046-5
11	Screw, No. 10-32 x 5/8" hex. hd., for yoke Fig. 12	13006-16
12	Yoke, for coils Fig. 13	42836-41
13	Coil, for relay, specify resistance	31066-99
14	Nut, 1/2"-32 x 5/32", for cores	6358-5
15	Washer, felt, for use under coils Fig. 13	21119
16	Back Stop, for retaining armature	55068
17	Support, left hand, for armature	29522-15
18	Core, for coils Fig. 13	29514-122
19	Name Plate, with drive screws, for relay	401-157 54392-1
20	Screw, No. 4-36, for fastening supports to armature	37696-4
21	Support, right hand, for armature	29522-16

PLATE E2181



Height—10 1/16″
Width—10⅛″
Depth—6¼″

Type K, Direct-Current
Retained-Neutral Line Relay
Size Eight

Type K Direct-Current

Retained-Neutral Line Relay

Size 8-6 Way-6FB

NOTE: This relay is always furnished with six dependent front and back contacts. Contacts are silver-impregnated carbon to silver front and silver to silver back.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.

For mounting centers see Plate E2349.

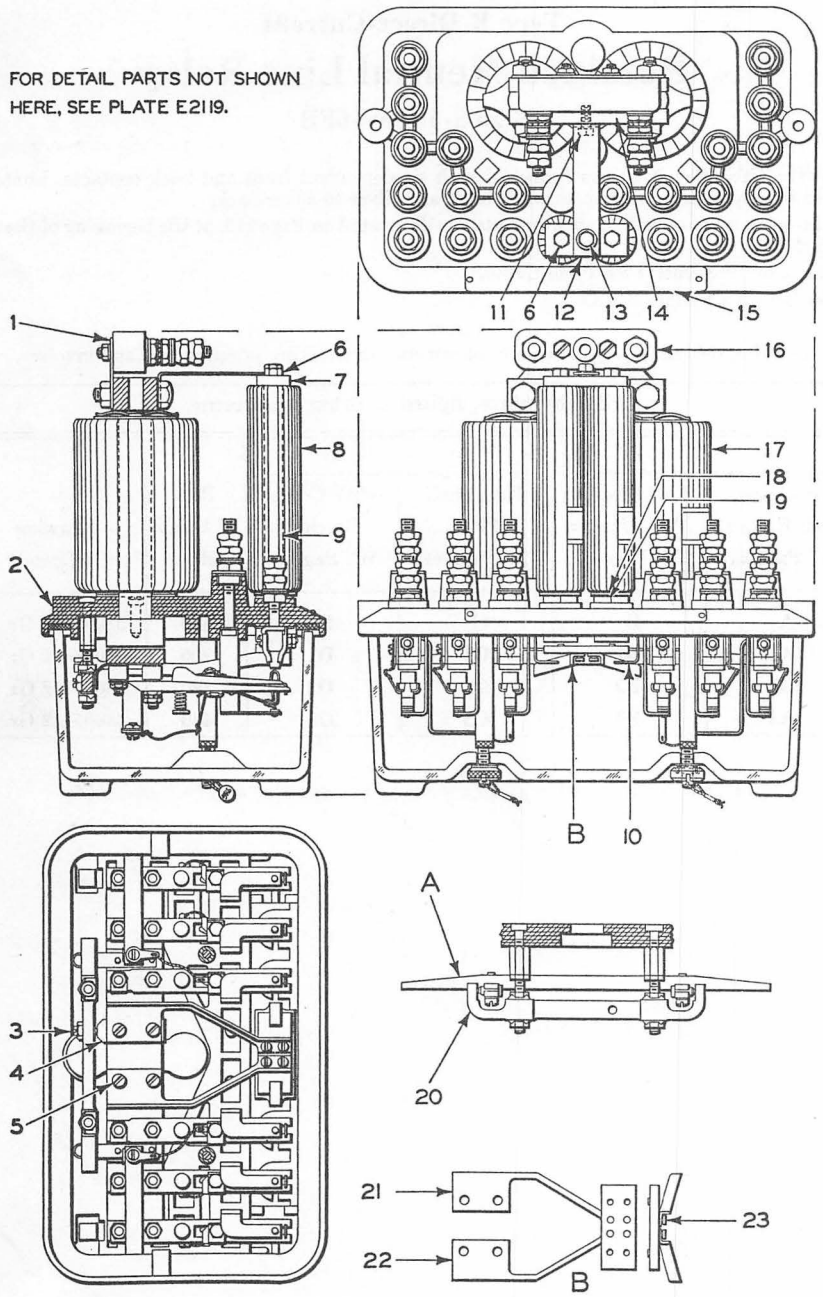
For details see Plate E2183.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.				Res. of Relay Ohms	Drawing Reference
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213		
A	B	C	D	100	53005–52 Gr. 5
A1	B1	C1	D1	200	53005–52 Gr. 4
A2	B2	C2	D2	320	53005–52 Gr. 2
A3	B3	C3	D3	480	53005–52 Gr. 3

FOR DETAIL PARTS NOT SHOWN HERE, SEE PLATE E2119.



Type K, Direct-Current
Retained-Neutral Line Relay
Size Eight

April 1952 GENERAL RAILWAY SIGNAL COMPANY

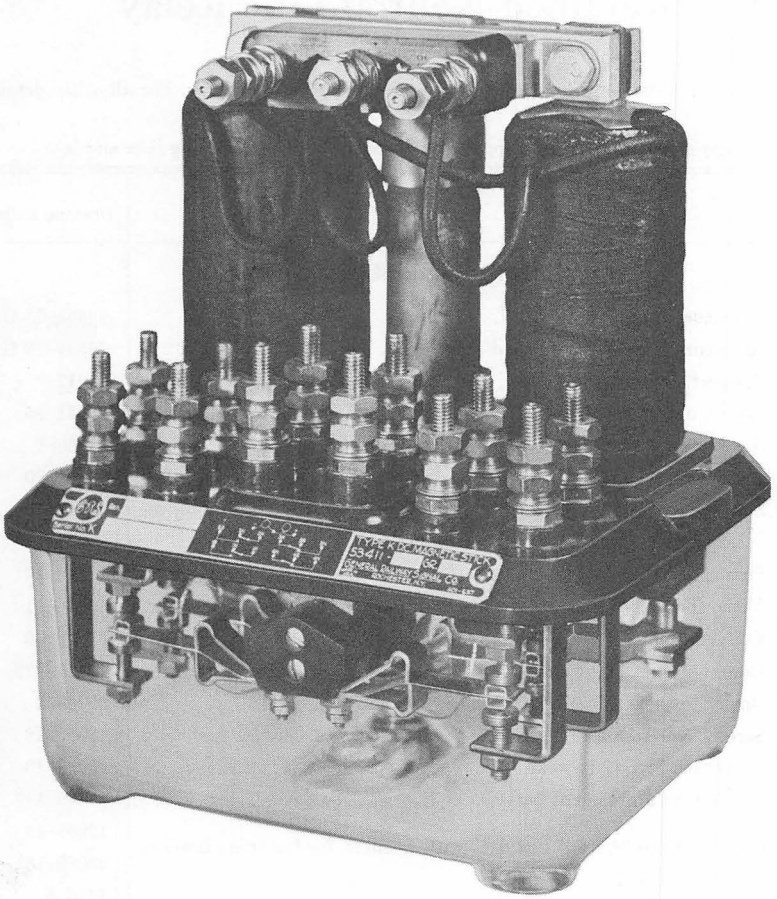
Type K Direct-Current
Retained-Neutral Line Relay
Size 8-6 Way-6FB

NOTE: The detail parts shown on this plate are special for this relay. For all other details for this relay see Plate E2119.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Armature Complete, neutral	42561–11 Gr. 3
B	Armature Complete, retained-neutral	29524–18 Gr. 3
1	Support, for terminal block	53017
2	Cover, only, for relay	29511–95
3	Screw, No. 10-32, headless, for spring Fig. 4	20360–2
4	Spring, for armature	16111–90
5	Screw, No. 10-32 x 5/16″ fil. hd., with lock washer, for fastening retaining armature to neutral armature	53348–1 53029–3
6	Screw, No. 10-32 x 5/8″ hex. hd., for yoke Fig. 7	13006–16
7	Yoke, for coils Fig. 8	42836–41
8	Coil, retaining, specify resistance	31066–99
9	Core, for coils Fig. 8	29514–122
10	Back Stop, for retaining armature	55068
11	Screw, No. 10-32 x 5/8″ hex. hd., with lock washer, for fastening bracket Fig. 12 to yoke	13006–16 53029–18
12	Bracket, reinforcement between coils	49092–147
13	Screw, No. 10-32 x 3/8″ hex. hd., with washers, for fastening bracket to yoke Fig. 7	13006–14 53029–18 5046–5
14	Yoke, drilled for screw Fig. 11	42836–40
15	Name Plate, with drive screws	401–286 54392–1
16	Terminal Block Complete, with two posts	46048–10 Gr. 3
17	Coil, for relay, specify resistance	
18	Felt Washer, for use under coils Fig. 8	21119
19	Nut, 1/2″-32 x 5/32″, for cores	6358–5
20	Bracket, only, for armature	53016–5
21	Support, right hand, for armature	29522–18
22	Support, left hand, for armature	29522–17
23	Screw, No. 4-36, for fastening supports to armature	37696–4

PLATE E2185



Height—8⅝″
Width—7⅜″
Depth—6⅜″

Type K, Direct-Current
Magnetic-Stick Relay
Size Four

April 1952 GENERAL RAILWAY SIGNAL COMPANY

Type K Direct-Current

Magnetic-Stick Relay

Size 4-4NR

NOTE: This relay is always furnished with four normal and reverse contacts. Contacts are platinum silver to platinum silver.

This relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.

For mounting centers see Plate E2349.

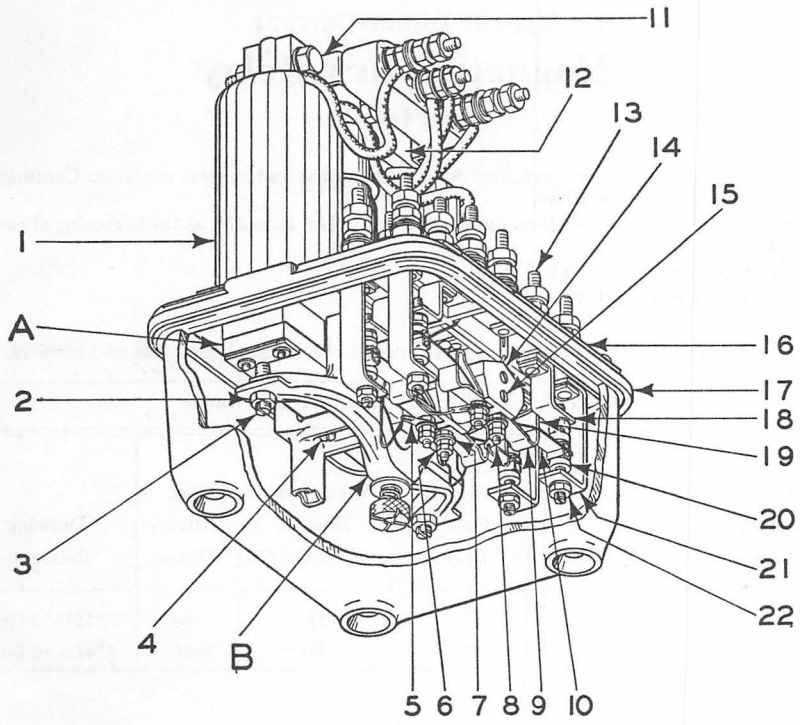
For details see Plate E2187.

Drawing references are shown for convenience in checking shipping lists and invoices.

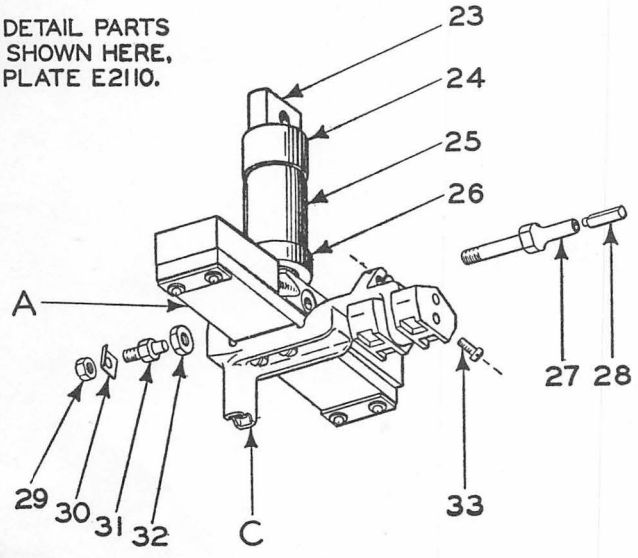
Order by plate, figure number and name

Fig. No.				Res. of Relay Ohms	Drawing Reference
With Spring Wall Hanger "X" Page 213	With Resilient Wall Hanger "Y" Page 213	With Shelf Plate "Z" Page 213	With Comb. Bracket "W" Page 213		
A	B	C	D	50	53411–50 Gr. 1
A1	B1	C1	D1	1000	53411–50 Gr. 2

GENERAL RAILWAY SIGNAL COMPANY April 1952



FOR DETAIL PARTS NOT SHOWN HERE, SEE PLATE E2110.



Type K, Direct-Current Magnetic-Stick Relay Size Four

Type K Direct-Current
Magnetic-Stick Relay
Size 4

NOTE: The detail parts shown on this plate are special for this relay. For all other detail parts for this relay see Plate E2110.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Armature Complete, with residuals and insulation	29524–21 Gr. 1
B	Support Complete, for relay	54302–3 Gr. 1
C	Bearing Complete, for relay	55603 Gr. 3
1	Coil, for relay, specify resistance	
2	Nut, $\frac{5}{16}$″-40 x $\frac{3}{16}$″ hex., for stop screw Fig. 3	12578–5
3	Stop Screw, $\frac{5}{16}$″-40, for armature	3018–21
4	Screw, No. 10-32 x ½″ fil. hd., with lock washer, for fastening armature to support	0472–1 34494
5	Connector Complete, for fingers	42760–1 Gr. 15
6	Nut, No. 6-32 x $\frac{3}{32}$″ hex., for fingers	37404–1
7	Washer, for nut Fig. 6	2534–1
8	Screw, No. 6-32 x ¾″ fil. hd., for fingers	367–1
9	Support, lower, for fingers	35921–104
10	Finger Complete, for relay	53011–37 Gr. 1
11	Support, for terminal block	53017–5
12	Yoke, for relay	42836–36
13	Screw, No. 14-24 x 1¾″ sq. hd., used as terminal post	350–5
14	Contact Block, for fingers	47508–60
15	Screw, No. 8-32 x 1¾″ fil. hd., with hex. nut and washer, for mounting contact block	28989–16 28948–1 22543–15
16	Name Plate, with drive screws, for relay	401–637 54392–1
17	Cover, for relay	29511–56
18	Support, for upper contacts	35921–50
19	Support, upper, for fingers	35921–101
20	Contact, for relay	42799–7 Gr. 13

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY April 1952

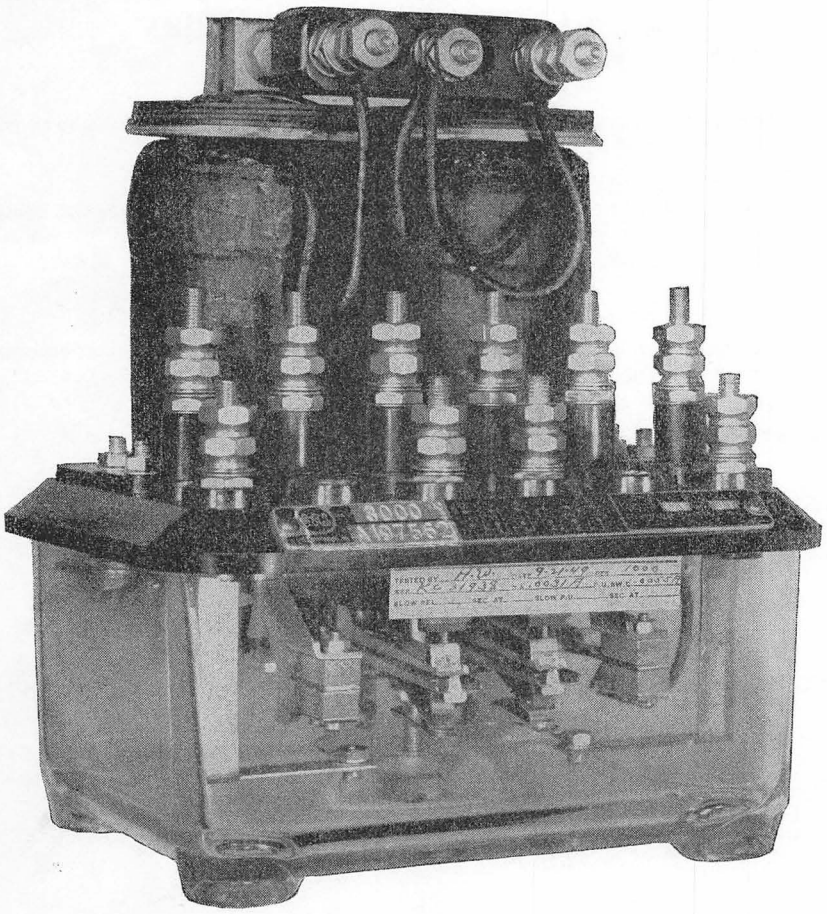
Type K Direct-Current
Magnetic-Stick Relay
Size 4

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
21	Support, for lower contacts	35921–51
22	Nut, No. 10-32 x 1/8″ hex., for contacts	577–12
23	Core, for relay	29514–148
24	Adapter, upper, for magnet	59720
25	Magnet, for relay	53007–18
26	Adapter, lower, for magnet	59720–1
27	Shaft, for bearing Fig. C	57037 Gr. 1
28	Trunnion, for bearing Fig. C	35269–9
29	Nut, No. 10-48 x 1/8″ hex., for trunnion Fig. 31	51029–2
30	Lock Washer, for nut	1601–28
31	Trunnion, for bearing Fig. C	35269–12
32	Nut, 5/16″-40 x 1/8″ hex., for shaft Fig. 27	12578–4
33	Screw, No. 8-32 x 1/2″ fil. hd., with lock washer, for trunnion Fig. 28	55160–13 53029–21

Memoranda

PLATE E2189



Height—8 5/8″
Width—7 3/8″
Depth—6 3/8″

Type K, Direct-Current
Lamp Control Neutral Relay
Size Four

June 1954 GENERAL RAILWAY SIGNAL COMPANY

Type K Direct-Current

Lamp Control Neutral Relay

Size 4-2FB-2B

NOTE—This relay was designed primarily for controlling lamp circuits at highway crossings which are protected by flashing lights.

The contacts will carry up to 15 amperes at 10 to 12 volts.

This relay is usually furnished with two dependent front and back regular contacts and two dependent back lamp control contacts.

The regular contacts are silver-impregnated carbon to silver front and silver to silver back.

The lamp control contacts are silver to silver.

This relay may be wall- or shelf-mounted; when wall mounting, a combination bracket shown on Page 213, Fig. W is required.

For mounting centers see Plate E2349.

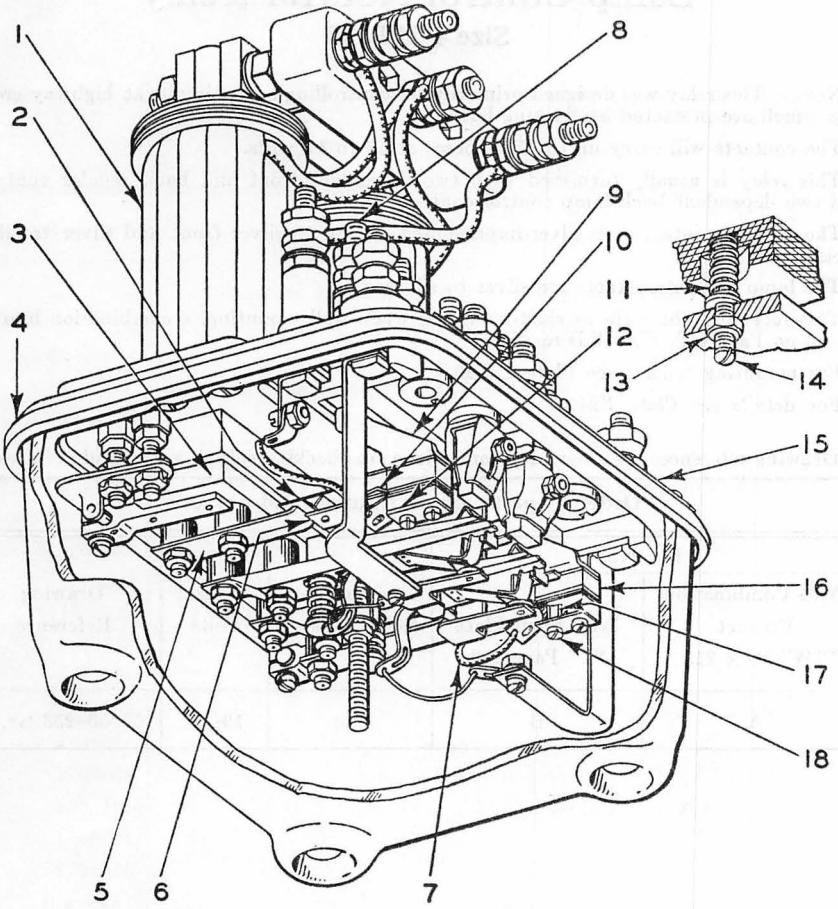
For details see Plate E2191.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.		Resistance of Relay—Ohms	Normal Volts	Drawing Reference
With Combination Bracket "W" Page 213	With Shelf Plate "Z" Page 213			
A	B	300	10–12	53000–255 Gr. 2

PLATE E2191



FOR DETAIL PARTS NOT SHOWN HERE, SEE PLATE E2110

Type K, Direct Current
Lamp Control Relay
Size Four

June 1954 GENERAL RAILWAY SIGNAL COMPANY

Type K Direct-Current

Lamp Control Relay

Size 4-2FB-2B

NOTE: The detail parts shown on this plate are special for this relay. For all other detail parts for this relay see Plate E2110.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
1	Coil, for relay, specify resistance	
2	Contact Complete, upper	13061–95 Gr. 1
3	Armature Complete, for details and order references see Plate E2110	42561–6 Gr. 7
4	Cover, for relay	29511–102
5	Arm, for operating contact	37375–2
6	Contact Complete, lower	13061–96 Gr. 1
7	Connector Complete	42760–190 Gr. 1
8	Screw, No. 14-24 x 2 7/16″ sq. hd., used as terminal post	350–9
9	Support, for contact	35921–174
10	Stop, for contact	55861–6
11	Spring, for armature	586–194
12	Washer, for insulations	22543–25
13	Nut, No. 14-40 x 1/8″ hex., for screw Fig. 14	53084–1
14	Screw, No. 14-40 for adjusting armature	53089–2
15	Name Plate, with drive screws	401–302 54392–1
16	Insulation, for contacts	37412–205
17	Bushing, insulation, for screws	7350–269
18	Screw, No. 6-32 x 7/8″ fil. hd., with hex. nut and lock washer for fastening fingers to insulation	3931–10 37404–2 53029–26

Memoranda

Section E, Part 19

Type K Tractive-Armature Direct-Current Primary-Secondary Relay Combination

Supersedes Section E, Part 19, dated December 1936

General Railway Signal Company
Printed in U. S. A.

Type K, Tractive-Armature Direct-Current Primary-Secondary Relay Combinations

Foreword

Improved Track Circuits a Necessity

Track circuit operation on American Railroads has remained substantially unchanged since its inception. True, improvements have been made in sources of energy and in relays, but the fundamental circuit is still a source of energy and a directly connected relay.

In recent years, light-weight short wheelbase equipment such as gas-electric, oil-electric, internal combustion cars and streamlined trains have been steadily increasing in use. Since every effort is being made to decrease their weight to the lowest possible value, their already high shunting resistance is mounting still higher. In order to secure proper track circuit operation, the shunting sensitivity of the track relay must be increased and in extreme conditions a higher inter-rail potential is recommended. (For further information regarding the use of high inter-rail potential, consult our nearest District Office.)

In addition, developments in the arts of signaling and train operation have been such as to require a definite time margin in the right direction for the proper operation of directional relays. Of course, this factor becomes effective only when the effective wheelbase is quite short.

Latest Development—Primary-Secondary Operation

The answer to this problem is the Primary-Secondary Relay Combination, which employs a Type K, Size 2 Relay and a Type K Size 4 or 6 Relay arranged as in the typical circuit illustrated in Fig. 1.

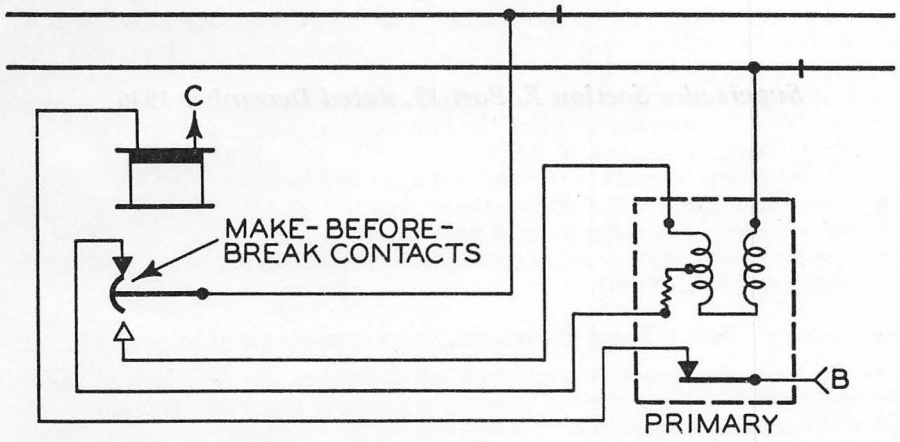


Fig. 1

Before explaining in detail the operation and characteristics of this circuit, it may be well to point out that the Size 2 Relay employed therein has a special tapped coil on one leg of the magnetic circuit, while the Secondary Relay is arranged for slow pickup action, and, in addition, has one special back contact which makes that front and back group a "make before break" contact.

Simple Dependable Operation

By referring to the typical circuit it is quite evident that if the track were occupied by a train the entire Primary-Secondary Combination would be de-energized. In that case, the auxiliary contact of the Secondary Relay would be made on the back side; thereby placing the entire winding of both coils of the Primary (Size 2) Relay in series and connected to the track.

Upon the removal of the train shunt, current flows from the positive side of the track battery through the series limiting resistor, one rail, the back contact of the Secondary Relay, the coils of the Primary Relay, and thence back to the negative side of the battery through the opposite rail; whereupon, the Primary Relay picks up. In doing so, its front contact closes and the Secondary Relay is energized from the local battery. As the Secondary Relay picked up, the front side of the auxiliary contact closed and the back side opened; thereby taking a portion of the winding of the tapped coil on the Primary Relay out of the circuit. The Primary Relay remains picked up under this condition, but automatically has had its release value materially raised and consequently its shunting sensitivity greatly increased.

Positive Time Margin Assures Progressive Shunt

Even under the most adverse conditions, the time margin of two adjacent Primary-Secondary Relay Combinations is positive or overlapping. In other words, the pickup time of one combination is always greater than the release time of the other combination. It is easy to demonstrate that whenever the time margin is positive, progressive and continuous track shunting as the train passes from one track section to another is assured with any wheelbase greater than the joint stagger regardless of the train speed, and certain wheelbases less than the joint stagger depending upon the train speed.

A wheelbase less than joint stagger is very unusual, and, besides, modern railroad practice demands its elimination. For if this condition prevails, it is possible for the train to stop on the staggered joints and not shunt either of the adjacent track sections.

A definite time margin or assurance of progressive shunting as a train passes from one block to another provides the following advantages:

1—Protection against loss of shunt.
2—Maintenance of route, detector, and approach locking.
3—Protection against loss of directional setups.
4—Elimination of flashing of light type signals.
5—Complete elimination in many cases of further timing requirements in signal and lock circuits.

"Secondary" Relay Time Characteristics Assure Continuous Shunt

As the train progresses through each track section, the first four of these advantages also depend upon a continuous shunt; therefore, an important contributing element thereto, the pickup time of the Secondary Relay, has been made longer than in any other similar relay.

Should the factors affecting the value of the train shunting resistance result in short intermittent periods when the shunting resistance increased to a point where the current flowing past the train became great enough to energize momentarily the Primary Relay, the Secondary Relay would not become energized unless the Primary Relay remained energized in excess of 1.5 seconds, and as high as 3 or more seconds depending upon local conditions.

Sensitivity Characteristics of Primary-Secondary Relay

Under identical conditions the shunting resistance is much greater for the Primary-Secondary Relay Combination than any similar arrangement; therefore, it overcomes to a greater extent the high shunting resistance of lightweight equipment.

This method of track circuit operation is also effective for that class of equipment which has wheels with a rubber or non-conducting shock-absorbing insert between the hub and the tire, provided a suitable flexible bond bridges the insert.

In order to secure the highest possible shunting sensitivity and thereby assure the highest degree of reliability of operation, it is important that the limiting resistance for any length circuit be adjusted so the relay current equals the relay working current plus 10% when the ballast resistance attains its lowest expected value for that circuit.

Economical Operation

In developing this relay due consideration was exercised, and every reasonable effort expended, to effect the improvements in time margin and shunting sensitivity without losing sight of the fact that economical operation was essential. Because of the high efficiency of the Type K, Size 2, Relay employed as the Primary Relay, the desired improvements have been effected without increasing the current consumption over that required by a standard A.A.R. Size 4 track relay.

Economy of operation is also benefited by the adjustment previously mentioned for securing the highest possible shunting sensitivity, for that adjustment usually means that the limiting resistance must be greatly increased in order to decrease the normal current flow.

Energy Supply for Secondary Relay

It should be borne in mind that a Type K Relay with slow pickup characteristics is designed and set up for operation on definite numbers of cells in the supply battery, with allowances being made for variations above and below the nominal voltage; consequently, its pickup time varies inversely with the voltage. However, at full battery voltage, the minimum limit of the pickup time is 1½ seconds.

The design of this relay also provides for its use on different size (number and type of cell) batteries by using coils of the proper resistance. Therefore, it is possible to use the track battery supplying the adjacent track circuit as a "local" battery for the Secondary Relay.

Memoranda

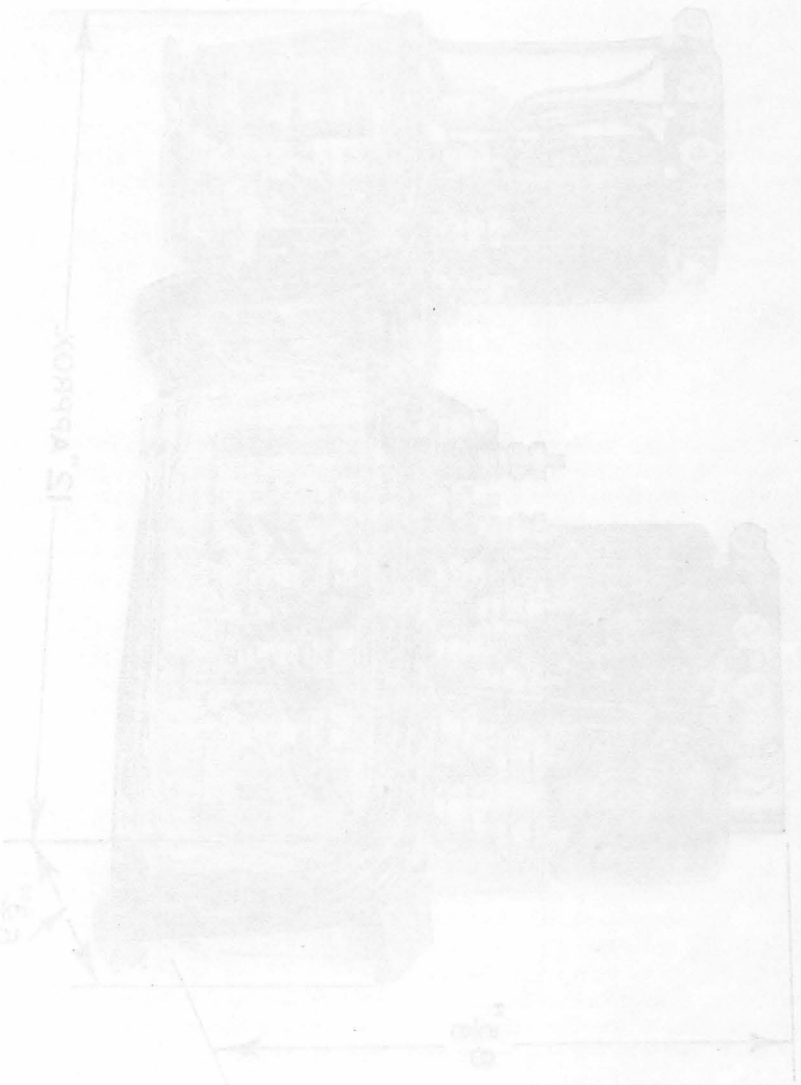
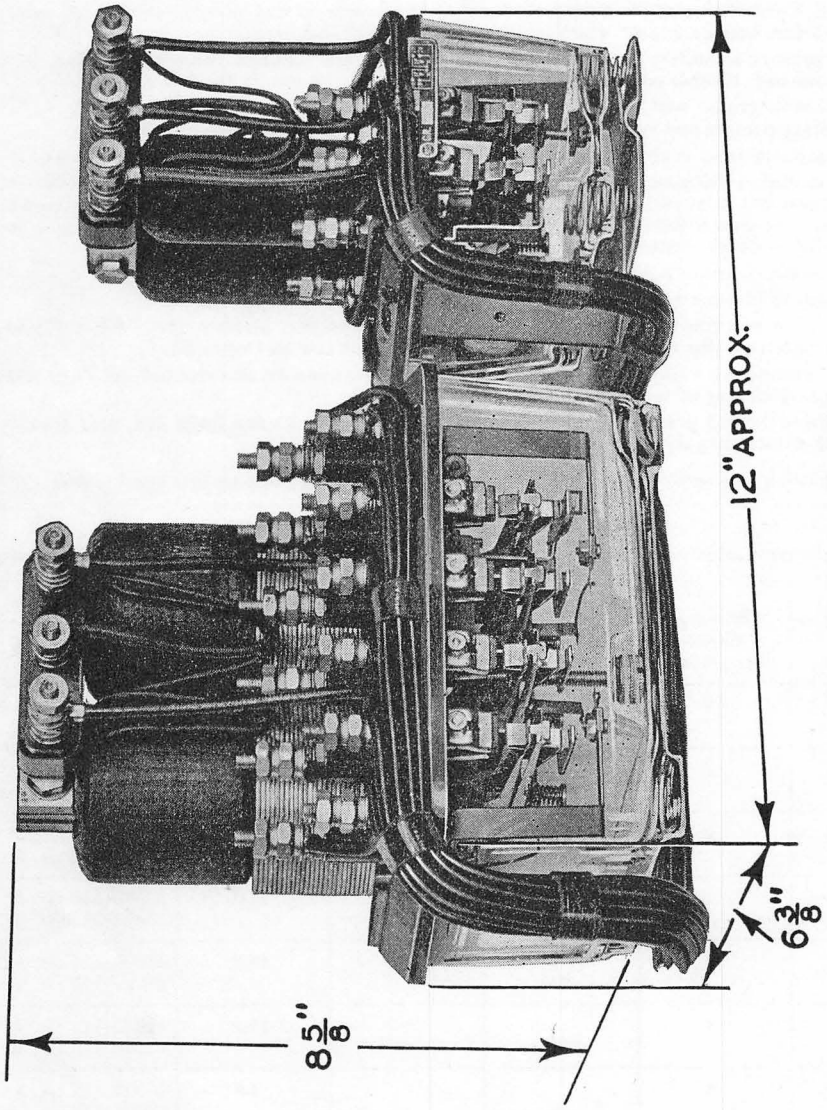


PLATE E1901



Type K, Direct-Current
Primary-Secondary Relay Combination

Type K Direct-Current

Primary-Secondary Relay Combination

NOTE: Contacts are silver-impregnated carbon to silver front and silver to silver back except "make-before-break contact" which is silver to silver front and back.

The primary-secondary combinations as listed below are standard combinations that have been furnished. If other combinations are required order must specify the following:

(1) Characteristics and limitations of track circuits and circuits controlled if possible.

(2) State number and type of cells in battery available for secondary operating relay.

The primary relay is always a Size 2 Relay with two dependent front and back contacts.

The secondary relay may be either a Size 4 or Size 6 Relay. The Size 4 Relay is equipped with three dependent front and back contacts and one "make-before-break contact" unless otherwise specified. The Size 6 Relay is equipped with five dependent front and back contacts and one "make-before-break contact" unless otherwise specified.

For details of primary relay see Plate E2105.

For details of secondary relays see Plates E2109 and E2113.

The primary relay is equipped with a shock absorber, as shown on Plate E2105, which permits the relay to be wall- or shelf-mounted as required.

The secondary relay may be wall- or shelf-mounted as illustrated on Page 213, at the beginning of Section E Part 21.

When ordering primary-secondary relay combinations see Page 213, and specify type of mounting desired for secondary relay.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Primary Size 2 Res.—Ohms	Secondary Size 4 Res.—Ohms	Secondary Size 6 Res.—Ohms	Secondary Relay 1.5 Secs. Pickup at 70° F. (In Volts)	Drawing Reference
A	2	9.5		0.8	53000–116 Gr. 5 53000–112 Gr. 6
A1	2	50		2.2	53000–116 Gr. 5 53000–112 Gr. 2
A2	2	500		9.0	53000–116 Gr. 5 53000–112 Gr. 5
A3	2	900		11.5*	53000–116 Gr. 5 53000–112 Gr. 3
A4	2	900		13.0	53000–116 Gr. 5 53000–112 Gr. 4
A5	2	1200		13.2	53000–116 Gr. 5 53000–112 Gr. 10
A6	2	160		4.6	53000–116 Gr. 5 53000–112 Gr. 11
A7	2	360		9.0	53000–116 Gr. 5 53000–112 Gr. 12

(*Continued on following page*)

GENERAL RAILWAY SIGNAL COMPANY July 1949

Type K Direct-Current

Primary-Secondary Relay Combination

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Primary Size 2 Res.—Ohms	Secondary Size 4 Res.—Ohms	Secondary Size 6 Res.—Ohms	Secondary Relay 1.5 Secs. Pickup at 70° F. (In Volts)	Drawing Reference
A8	2	580		9.0	53000–116 Gr. 5 53000–112 Gr. 9
A9	2	880		11.5	53000–116 Gr. 5 53000–112 Gr. 8
B	4	9.5		0.8	53000–116 Gr. 6 53000–112 Gr. 6
B1	4	50		2.2	53000–116 Gr. 6 53000–112 Gr. 2
B2	4	500		9.0	53000–116 Gr. 6 53000–112 Gr. 5
B3	4	900		11.5	53000–116 Gr. 6 53000–112 Gr. 3
B4	4	900		13.0	53000–116 Gr. 6 53000–112 Gr. 4
B5	4	1200		13.2	53000–116 Gr. 6 53000–112 Gr. 10
B6	4	160		4.6	53000–116 Gr. 6 53000–112 Gr. 11
B7	4	360		9.0	53000–116 Gr. 6 53000–112 Gr. 12
B8	4	580		9.0	53000–116 Gr. 6 53000–112 Gr. 9
B9	4	880		11.5	53000–116 Gr. 6 53000–112 Gr. 8
C	11	9.5		0.8	53000–116 Gr. 7 53000–112 Gr. 6
C1	11	50		2.2	53000–116 Gr. 7 53000–112 Gr. 2
C2	11	500		9.0	53000–116 Gr. 7 53000–112 Gr. 5

(Continued on following page)

July 1949 GENERAL RAILWAY SIGNAL COMPANY

Type K Direct-Current

Primary-Secondary Relay Combination

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Primary Size 2 Res.—Ohms	Secondary Size 4 Res.—Ohms	Secondary Size 6 Res.—Ohms	Secondary Relay 1.5 Secs. Pickup at 70° F. (In Volts)	Drawing Reference
C3	11	900		11.5	53000–116 Gr. 7 53000–112 Gr. 3
C4	11	900		13.0	53000–116 Gr. 7 53000–112 Gr. 4
C5	11	1200		13.2	53000–116 Gr. 7 53000–112 Gr. 10
C6	11	160		4.6	53000–116 Gr. 7 53000–112 Gr. 11
C7	11	360		9.0	53000–116 Gr. 7 53000–112 Gr. 12
C8	11	580		9.0	53000–116 Gr. 7 53000–112 Gr. 9
C9	11	880		11.5	53000–116 Gr. 7 53000–112 Gr. 8
D	2		580	9.2	53000–116 Gr. 5 53000–119 Gr. 5
D1	2		880	11.5	53000–116 Gr. 5 53000–119 Gr. 6
D2	2		1200	13.8	53000–116 Gr. 5 53000–119 Gr. 7
E	4		580	9.2	53000–116 Gr. 6 53000–119 Gr. 5
E1	4		880	11.5	53000–116 Gr. 6 53000–119 Gr. 6
E2	4		1200	13.8	53000–116 Gr. 6 53000–119 Gr. 7
F	11		580	9.2	53000–116 Gr. 7 53000–119 Gr. 5
F1	11		880	11.5	53000–116 Gr. 7 53000–119 Gr. 6
F2	11		1200	13.8	53000–116 Gr. 7 53000–119 Gr. 7

Memoranda

Section E, Part 18

Type K Direct-Current Timing Relays

General Railway Signal Company
Printed in U. S. A.

Type KB Timing Relay

Foreword and Ordering Information

The Type KB Timing Relay, constitutes the latest addition to the G-R-S line of relays—relays that cover every signaling requirement.

It is a simple, compact, accurate motor-operated timing relay. Tests show that surrounding temperature and normal operating voltage variations have no appreciable effect on the high degree of timing accuracy attainable with this relay.

The Type KB Timing Relay is applicable for use in approach timing at interlocking plants, outlying switch locations in remote controlled or cTc territory, automatic interlockings, highway crossing protection locations, or any other application where accurate, dependable timing is required.

Some of the features are listed below:

(a) One of the outstanding features of the Type KB Timing Relay is its extreme simplicity of construction. A constant speed motor with gear train, a pair of holding coils, and a calibrated timing gear wheel with a check and a timing contact constitute the principal parts of the mechanism.

(b) One check contact and one timing contact are provided for use in external circuits. Ordinarily, most timing circuit requirements may be met with one timing contact. If, however, more are required, a Type K, Size 2, 4, 6, or 8 neutral relay may be used as a repeater at an economy not possible with any multiple contact timing relay of similar accuracy.

(c) Another feature of the Type KB Timing Relay is that no auxiliary relay is required to cut out the timing element at the expiration of the operating time as is ordinarily the case with thermal type timing relays. In the Type KB, the motor circuit is opened by a motor contact after the timing contact has

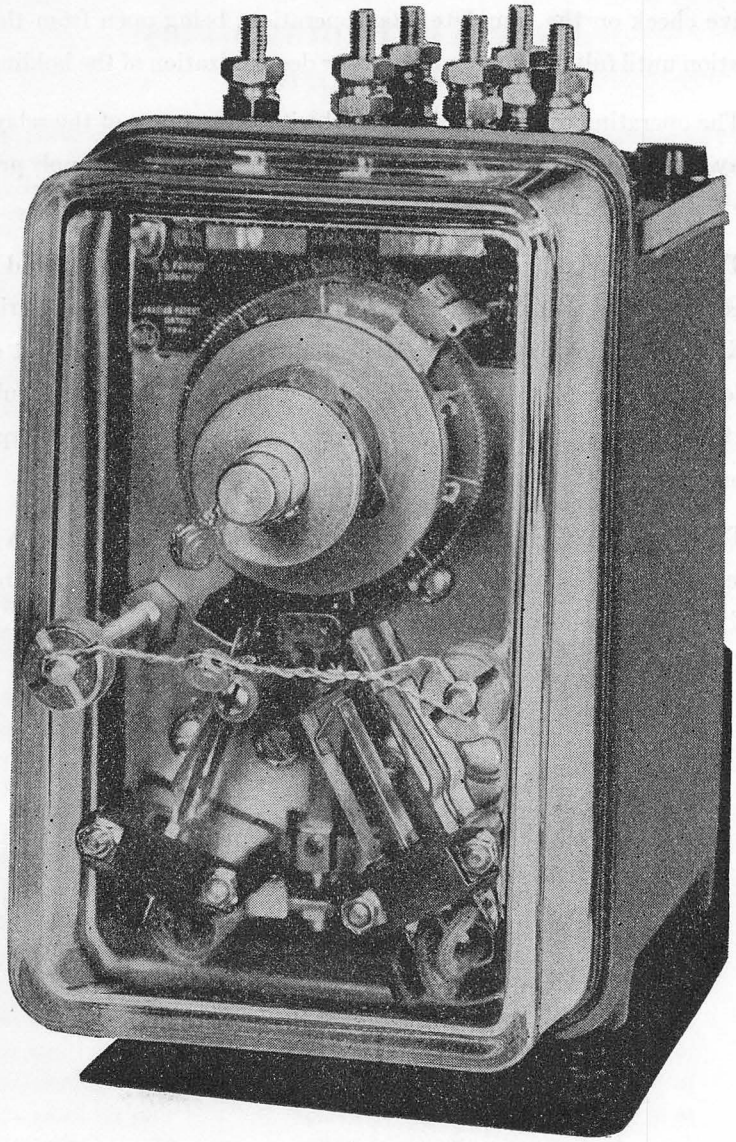
closed. The timing contact is held in the full-time-elapsed (closed) position by the holding coils until the relay is deenergized. The check contact provides a positive check on the complete relay operation, being open from the start of operation until full return to normal after deenergization of the holding coils.

(d) The operating time may be adjusted within the range of the relay when the relay is energized or deenergized. The external adjusting knob provided may be sealed as a safeguard against unauthorized adjustment.

(e) The Type KB Timing Relay's magnetic structure material and proper cross-sectional areas assure the high magnetic efficiency characteristic of Type K relays. It may be operated locally or over a limited amount of line. The release is sufficiently slow to bridge the change of its control circuit from a front to a back contact, or vice versa, in ordinary acting relays incorporated in its control circuit.

(f) The Type KB Timing Relay may be wall- or shelf-mounted. A hanger equipped with shock-absorber springs is provided with each relay and may be used for either wall- or shelf-mounting.

PLATE E1801



Height—8 9/16″
Width—4¾″
Depth—8¾″

Type KB Timing Relay
Motor-Operated

Type KB Timing Relay

Motor-Operated

NOTE: This relay is always furnished with one check contact and one timing contact. The check contact is silver to silver and the timing contact is silver-impregnated carbon to silver.

This relay may be wall- or shelf-mounted with combination bracket shown on Plate E1809, Fig. 44.

For details see Plate E1809.

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Oper. Volts	Time Range		Time Setting	Timing Sealed	Drawing Reference
		Min.	Max.			
A	8	4 Sec.	64 Sec.	15 Sec.	Yes	57262–163 Gr. 6
A1	8	4 Sec.	64 Sec.	64 Sec.	No	57262–163 Gr. 3
A10	8	1 Min.	8 Min.	2 Min.	Yes	57262–163 Gr. 5
A11	8	1 Min.	8 Min.	3 Min.	Yes	57262–163 Gr. 4
A12	8	1 Min.	8 Min.	8 Min.	No	57262–163 Gr. 2
B	10	4 Sec.	64 Sec.	5 Sec.	Yes	57262–164 Gr. 17
B1	10	4 Sec.	64 Sec.	10 Sec.	Yes	57262–164 Gr. 21
B2	10	4 Sec.	64 Sec.	15-17 Sec.	Yes	57262–164 Gr. 4
B3	10	4 Sec.	64 Sec.	30 Sec.	Yes	57262–164 Gr. 7
B4	10	4 Sec.	64 Sec.	32 Sec.	Yes	57262–164 Gr. 16
B5	10	4 Sec.	64 Sec.	35 Sec.	Yes	57262–164 Gr. 19
B6	10	4 Sec.	64 Sec.	45 Sec.	Yes	57262–164 Gr. 22
B7	10	4 Sec.	64 Sec.	60 Sec.	Yes	57262–164 Gr. 14
B8	10	4 Sec.	64 Sec.	64 Sec.	No	57262–164 Gr. 3
B20	10	1 Min.	8 Min.	75 Sec.	Yes	57262–164 Gr. 12
B21	10	1 Min.	8 Min.	1.5 Min.	Yes	57262–164 Gr. 10
B22	10	1 Min.	8 Min.	2 Min.	Yes	57262–164 Gr. 8
B23	10	1 Min.	8 Min.	150 Sec.	Yes	57262–164 Gr. 13
B24	10	1 Min.	8 Min.	3 Min.	Yes	57262–164 Gr. 5
B25	10	1 Min.	8 Min.	4 Min.	Yes	57262–164 Gr. 9
B26	10	1 Min.	8 Min.	4 Min. 5 Sec.	Yes	57262–164 Gr. 15
B27	10	1 Min.	8 Min.	5 Min.	Yes	57262–164 Gr. 11
B28	10	1 Min.	8 Min.	5 Min. 30 Sec.	Yes	57262–164 Gr. 20

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY July 1949

Type KB Timing Relay

Motor-Operated

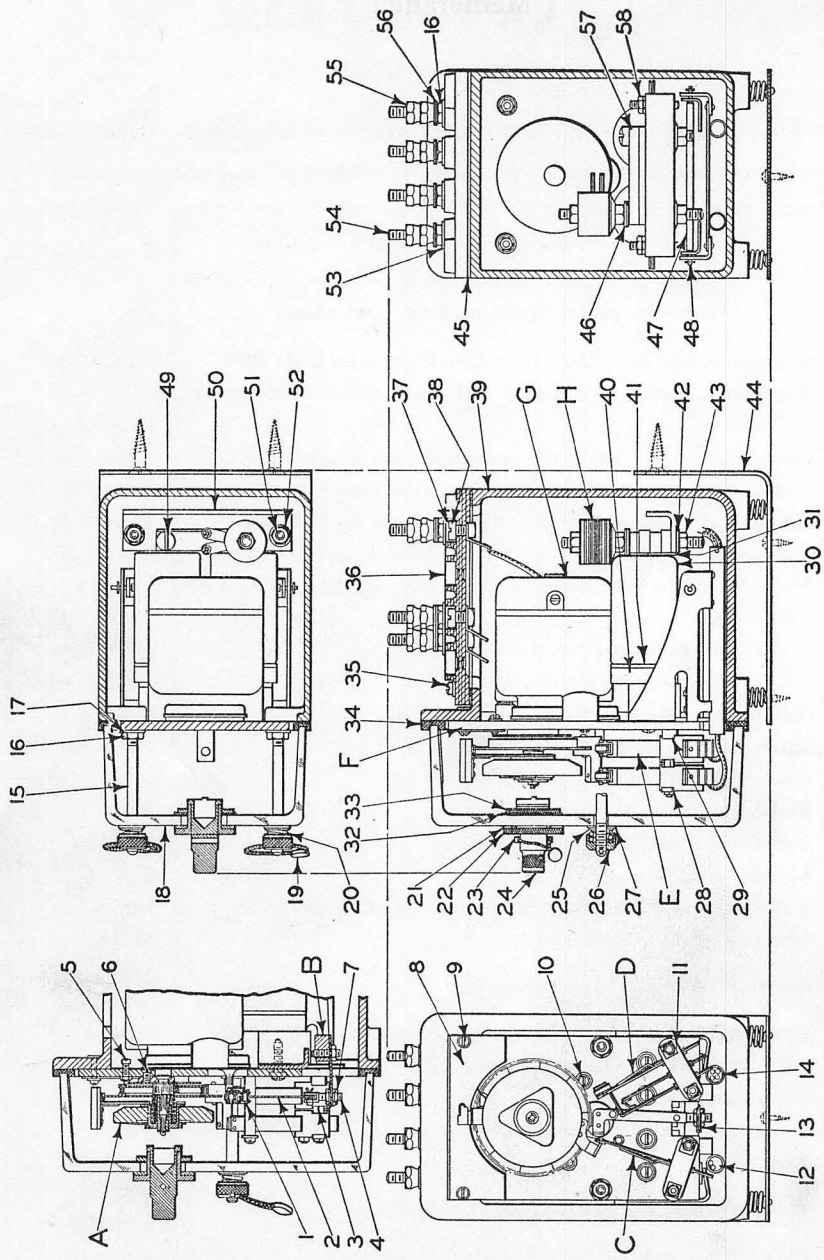
Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Fig. No.	Oper. Volts	Time Range		Time Setting	Timing Sealed	Drawing Reference
		Min.	Max.			
B29	10	1 Min.	8 Min.	6 Min.	Yes	57262–164 Gr. 6
B30	10	1 Min.	8 Min.	8 Min.	Yes	57262–164 Gr. 18
B31	10	1 Min.	8 Min.	8 Min.	No	57262–164 Gr. 2
C	12	4 Sec.	64 Sec.	64 Sec.	No	57262–165 Gr. 3
C10	12	1 Min.	8 Min.	3 Min.	Yes	57262–165 Gr. 4
C11	12	1 Min.	8 Min.	8 Min.	No	57262–165 Gr. 2

Memoranda

PLATE E1809



Type KB Timing Relay
Motor-Operated

July 1949 GENERAL RAILWAY SIGNAL COMPANY

Type KB Timing Relay

Motor-Operated

NOTE: This plate is included for ordering repair parts for all relays shown on Plate E1801.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Timer Complete, for details and order references see Plate E1817	57289 Gr. 1
B	Armature Complete, for details and order references see Plate E1817	57280 Gr. 1
C	Contact Group, for details and order references see Plate E1817	57265–3 Gr. 1
D	Contact Group, for details and order references see Plate E1817	57265–1 Gr. 2
E	Contact Group, for details and order references see Plate E1817	57265–2 Gr. 2
F	Plate Complete, for details and order references see Plate E1817	57273–1 Gr. 1
G	Motor Complete, with gear train, for 8 volt operation, timing 4 to 64 seconds	56108–160 Gr. 2
G1	as above, except timing 1 to 8 minutes	56108–160 Gr. 1
G2	same as Fig. G, except for 10 volt operation	56108–160 Gr. 4
G3	same as Fig. G1 except for 10 volt operation	56108–160 Gr. 3
G4	same as Fig. G, except for 12 volt operation	56108–160 Gr. 6
G5	same as Fig. G1, except for 12 volt operation	56108–160 Gr. 5
H	Rectifying Unit Complete, for relay	57434–3 Gr. 2
1	Split Pin, for link	42146–10
2	Link, for armature	37367–5
3	Nut, No. 8-32 hex., for stud Fig. 17 shown on Plate E1817	3891–4
4	Stud, No. 10-32, for armature	57292
5	Screw, No. 6-40, fil. hd., with hex. nut	1054–6 3614–7
6	Screw, No. 8-32 x $\frac{5}{16}$″ csk. hd., for mounting timer	35042–12
7	Nut, No. 10-32 hex., for stud Fig. 4	47344–1
8	Name Plate, for relay	401–285
9	Screw, No. 8-32 x $\frac{1}{2}$″ rd. hd., with lock washer, for mounting plate Fig. F	2553–15 53029–21
10	Screw, No. 6-32 x $\frac{7}{16}$″ fil. hd., with lock washer	3931–28 53029–26
11	Lock Washer, bent up, for nut on contact group	1601–111

(*Continued on following page*)

GENERAL RAILWAY SIGNAL COMPANY July 1949

Type KB Timing Relay

Motor-Operated

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
12	Lead Complete, left-hand	5075–61 Gr. 1
13	Lock Washer, for nut Fig. 7	1601–41
14	Lead Complete, right-hand	5075–47 Gr. 1
15	Stud, for holding cover to case	49476–81
16	Nut, No. 14-24 x 1/8" hex., for stud Fig. 15 and terminal posts	46989–2
17	Washer, for nut Fig. 16	53029–22
18	Glass Cover, for relay	37380–28
19	Car Seal, for relay	35285
20	Spring, for nut	786–150
21	Washer, 1/16" thick, for use between bushing Fig. 22 and glass cover	1333–14
22	Bushing, adjusting knob	8942–60
23	Sealing Pin, for relay	492–5
24	Adjusting Knob, for relay	49843–11
25	Washer, steel, for spring Fig. 20	50587–1
26	Nut, No. 14-24 rd., knurled, for fastening glass cover to relay	846–8
27	Washer, rubber, for use between steel washer and glass cover	1333–12
28	Nut, No. 8-32 x 1/8" hex., for studs supporting contact	28948–1
29	Spacer, for use between contact Fig. E and case	49655–180
30	Coil, 400 ohms resistance, for relay	31066–114 Gr. 1
31	Washer, fibre, insulation between coil and yoke	37017–31
32	Washer, 1/64" thick, for use between nut Fig. 33 and glass cover	1225–156
33	Nut, 3/4"-16 rd., knurled, for bushing Fig. 22	846–40
34	Gasket, for glass cover	13014–240
35	Screw, No. 10-32 x 5/8" fil. hd., with lock washer, for mounting cover.	12280–11 53029–3
36	Cover, bakelite, for relay	29511–88
37	Lead Washer, for terminal posts	1533–41
38	Spanner Nut, No. 14-24 for terminal posts	42840–5
39	Case, only, for relay	57266
40	Slug, for relay	54960–31

(*Continued on following page*)

July 1949 GENERAL RAILWAY SIGNAL COMPANY

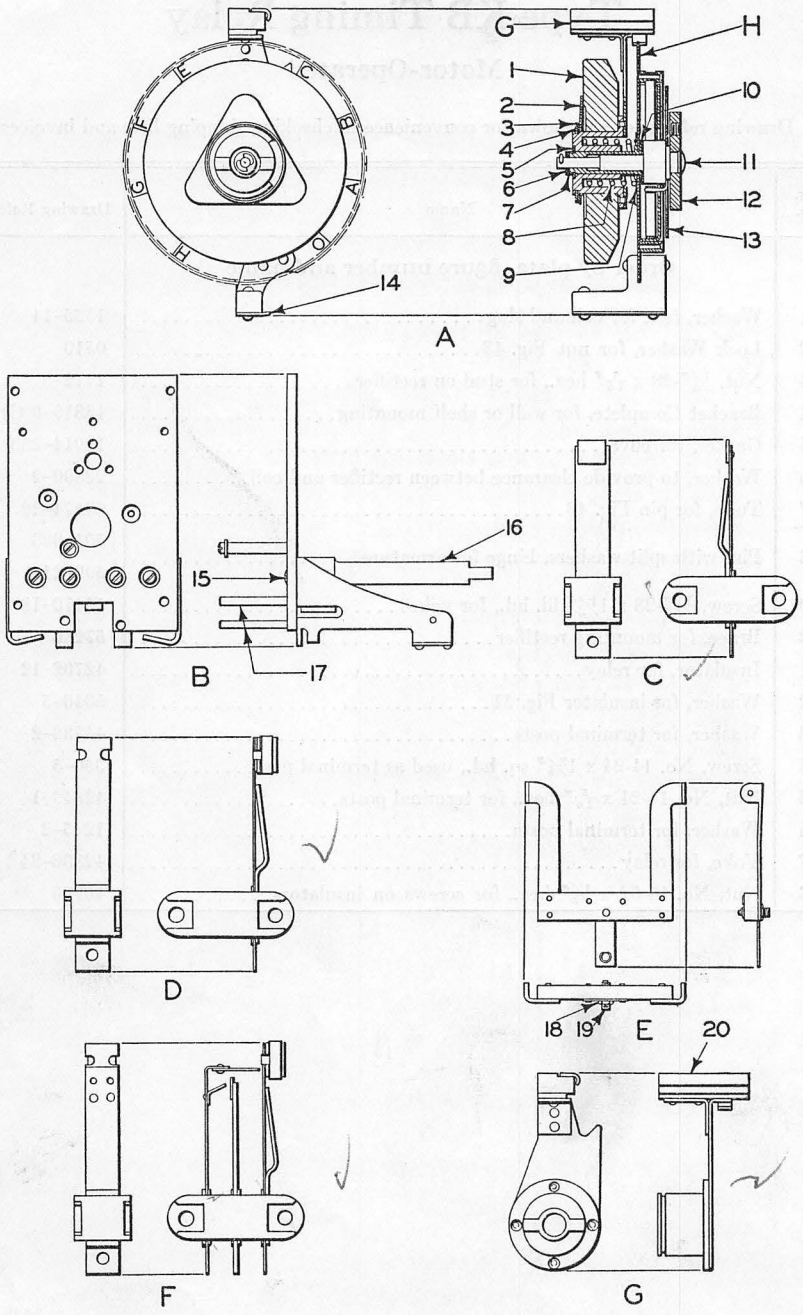
Type KB Timing Relay

Motor-Operated

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
41	Washer, felt, for coil and slug	1533–14
42	Lock Washer, for nut Fig. 43	0510
43	Nut, ¼″-28 x $\frac{7}{16}$″ hex., for stud on rectifier	1472–9
44	Bracket Complete, for wall or shelf mounting	42819–9 Gr. 2
45	Gasket, for cover	13014–239
46	Washer, to provide clearance between rectifier and coil	22890–2
47	Tube, for pin Fig. 48	29474–29
48	Pin, with split washers, hinge for armature	504–363 590–21
49	Screw, ¼″-28 x 1½″ fil. hd., for yoke	55470–18
50	Brace, for mounting rectifier	57286
51	Insulator, for relay	42792–12
52	Washer, for insulator Fig. 51	5046–5
53	Washer, for terminal posts	45736–2
54	Screw, No. 14-24 x 1¾″ sq. hd., used as terminal post	350–5
55	Nut, No. 14-24 x $\frac{5}{16}$″ hex., for terminal posts	42843–1
56	Washer, for terminal posts	1225–2
57	Yoke, for relay	42836–34
58	Nut, No. 10-32 x ⅛″ hex., for screws on insulators	40796

PLATE E1817



Type KB Timing Relay
Detail Parts

July 1949 GENERAL RAILWAY SIGNAL COMPANY

Type KB Timing Relay

Detail Parts

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Timer Complete, for Type KB Timing Relay	57289 Gr. 1
B	Plate Complete, with cores	57273–1 Gr. 1
C	Contact Complete, as shown	57265–3 Gr. 1
D	Contact Complete, as shown	57265–2 Gr. 2
E	Armature Complete, for Type KB Timing Relay	57280 Gr. 1
F	Contact Complete, as shown	57265–1 Gr. 2
G	Adjuster Complete, for timer	57290 Gr. 1
H	Gear Complete, for timer, includes gear, hub, contact, ring, cup, all riveted together	57293 Gr. 1
1	Flywheel, for timer	57279
2	Spring Washer, for flywheel	36177–4
3	Cup Washer, for washer Fig. 4	22539–13
4	Washer, for hub	590–78
5	Washer, for hub	590–79
6	Shim Washer, .005″ thick, for end of shaft	1225–154
6a	as above, except .010″ thick	1225–155
7	Washer, for use behind shim Fig. 6	47847–1
8	Spring, for timer	586–139
9	Washer, for gear	5046–8
10	Washer, for gear	3890–6
11	Shaft, for timer	47544–49
12	Washer, for mounting timer	57281
13	Disc, for timer	34829–1
14	Contact, with rivets, for gear Fig. H	48141–75 42384–1 43171–1
15	Screw, No. 10-32 x ½″ fil. hd., with lock washer, for fastening cores to bracket	12280–37 53029–3
16	Core, for relay	29514–114
17	Stud, No. 8-32, for supporting contact groups	879–59

(*Continued on following page*)

GENERAL RAILWAY SIGNAL COMPANY July 1949

Type KB Timing Relay

Detail Parts

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
18	Nut, No. 10-32 x $\frac{3}{32}$" hex., for screw Fig. 19	47344–1
19	Screw, No. 10-32, headless, for armature	5100–39
20	Contact, with rivets, for adjuster	48141–74 0686–1

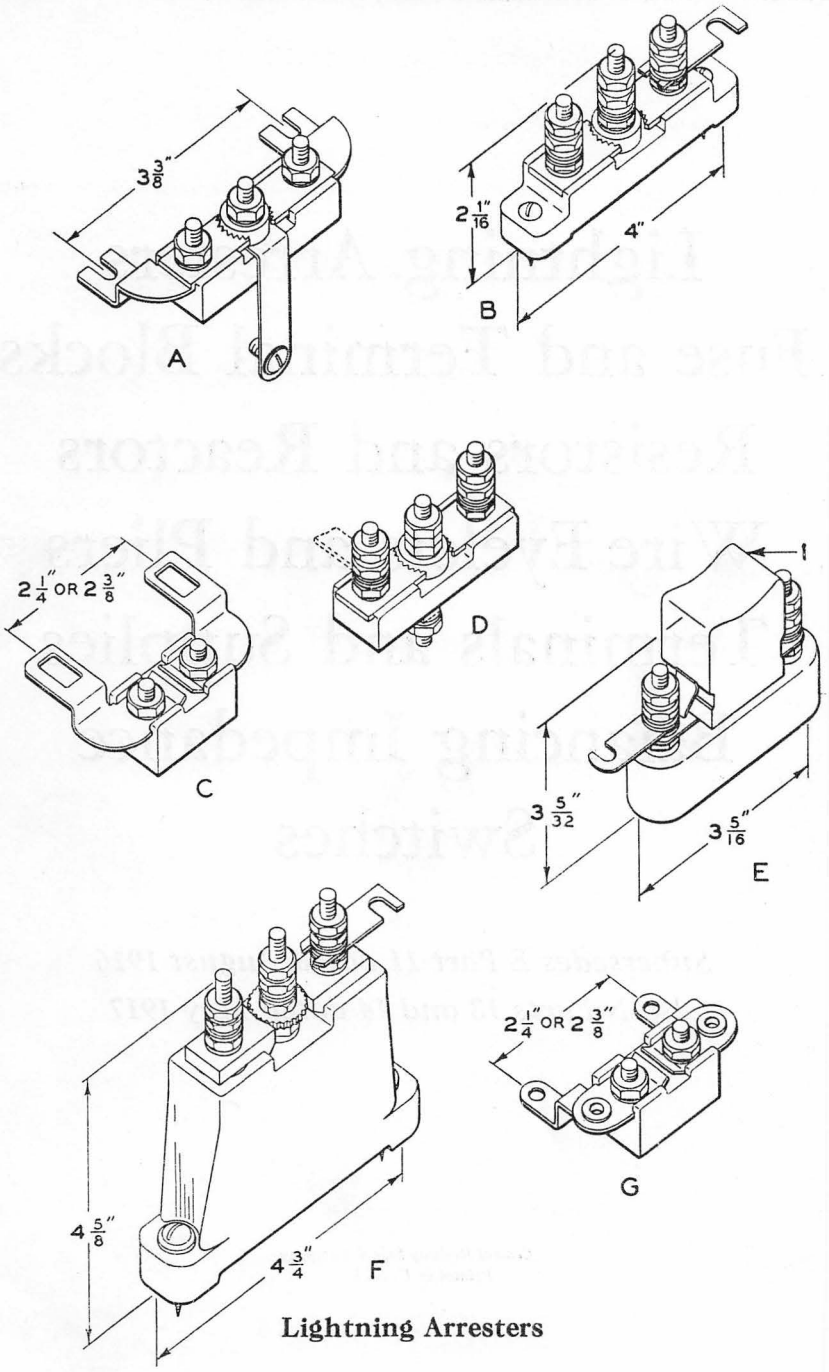
Section E, Part 11

Lightning Arresters
Fuse and Terminal Blocks
Resistors and Reactors
Wire Eyelets and Pliers
Terminals and Supplies
Balancing Impedance
Switches

Supersedes E Part 11 dated August 1916
also N Parts 13 and 14 dated May 1917

General Railway Signal Company
Printed in U. S. A

PLATE E1102



Lightning Arresters

November 1954 GENERAL RAILWAY SIGNAL COMPANY

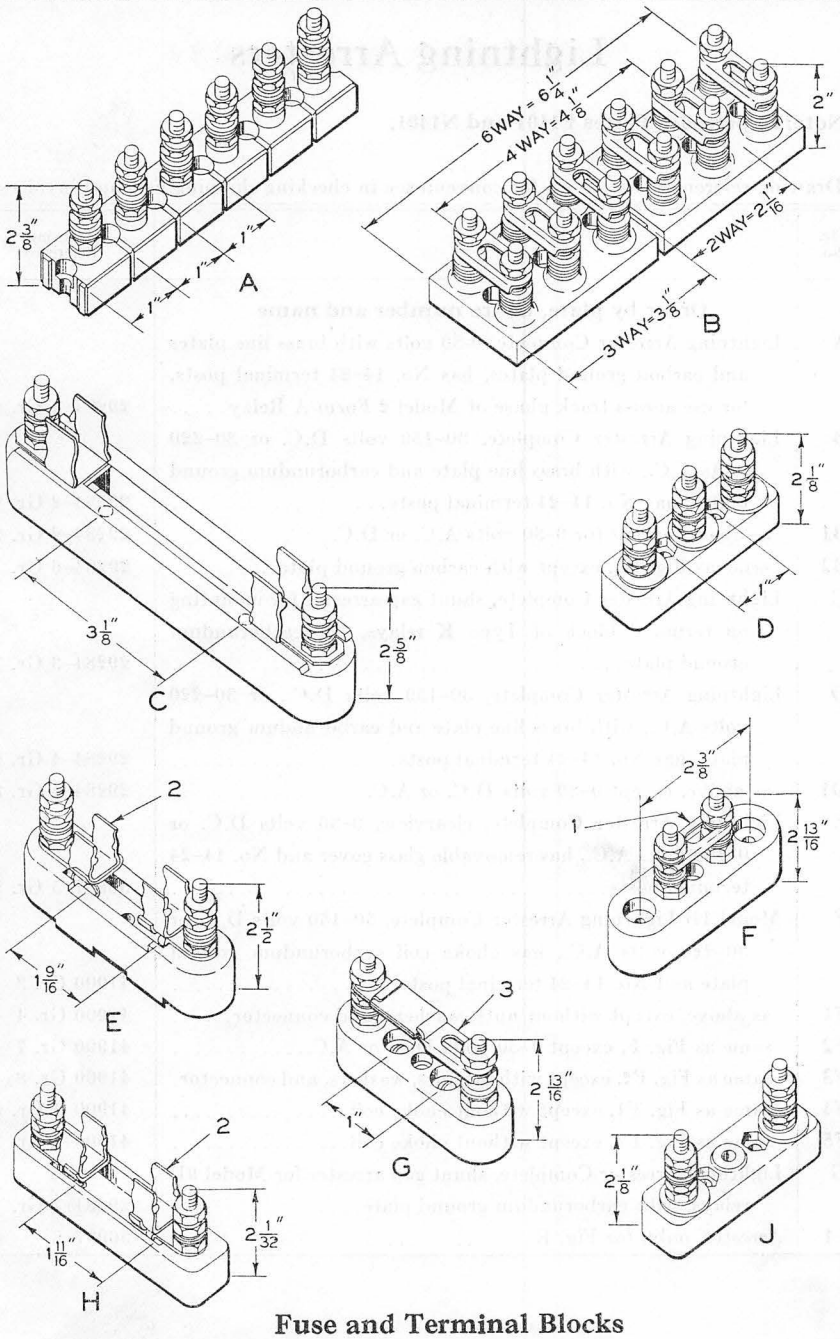
Lightning Arresters

Note: Supersedes Plates E1101 and N1401.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Lightning Arrester Complete, 0-30 volts with brass line plates and carbon ground plates, has No. 14–24 terminal posts, for use across track phase of Model 2 Form A Relay	29284–1 Gr. 2
B	Lightning Arrester Complete, 30–150 volts D.C. or 30–220 volts A.C., with brass line plate and carborundum ground plates, has No. 14–24 terminal posts	29284–2 Gr. 2
B1	as above, except for 0–30 volts A.C. or D.C.	29284–2 Gr. 3
B2	same as Fig. B1, except with carbon ground plate	29284–6 Gr. 1
C	Lightning Arrester Complete, shunt gap arrester for mounting on terminal block of Type K relays, has carborundum ground plate	29284–3 Gr. 1
D	Lightning Arrester Complete, 30–150 volts D.C., or 30–220 volts A.C., with brass line plate and carborundum ground plate, has No. 14–24 terminal posts	29284–4 Gr. 2
D1	as above, except 0–30 volts D.C. or A.C.	29284–4 Gr. 3
E	Lightning Arrester Complete, clearview, 0–30 volts D.C. or 0–125 volts A.C., has removable glass cover and No. 14–24 terminal posts	56937–5 Gr. 2
F	Model 1B Lightning Arrester Complete, 30–150 volts D.C. or 30–220 volts A.C., has choke coil carborundum ground plate and No. 14–24 terminal posts	41900 Gr. 3
F1	as above, except without nuts, washers, and connector	41900 Gr. 4
F2	same as Fig. F, except 0–30 volts D.C. or A.C.	41900 Gr. 7
F3	same as Fig. F2, except without nuts, washers, and connector.	41900 Gr. 8
F4	same as Fig. F1, except without choke coil	41900–1 Gr. 2
F5	same as Fig. F2, except without choke coil	41900–1 Gr. 1
G	Lightning Arrester Complete, shunt gap arrester for Model 9E relays, with carborundum ground plate	29284–7 Gr. 1
1	Arrester, only, for Fig. E	56937–6

PLATE E1117



Fuse and Terminal Blocks

November 1954 GENERAL RAILWAY SIGNAL COMPANY

Fuse and Terminal Blocks

Supersedes Plates E1103 and N1401

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Terminal Block Complete, 6-way, as shown, has No. 14–24 terminal posts. May be furnished as 2-way to 12-way when specified	46048–24 Gr. 5
B	Terminal Block Complete, 6-way, with connectors, has No. 14–24 terminal posts	46048–23 Gr. 5
B1	as above, except 4-way	46048–23 Gr. 8
B2	same as Fig. B, except 3-way	46048–23 Gr. 7
B3	same as Fig. B, except 2-way	46048–23 Gr. 6
B4	same as Fig. B, except without connectors	46048–23 Gr. 1
B5	same as Fig. B1, except without connectors	46048–23 Gr. 4
B6	same as Fig. B2, except without connectors	46048–23 Gr. 3
B7	same as Fig. B3, except without connectors	46048–23 Gr. 2
C	Fuse Block Complete, for 0–30 amp., 600 volt cartridge fuse, has No. 14–24 terminal posts	58862–1
D	Terminal Block Complete, with three No. 14–24 terminal posts, nuts, and washers. **If tags are required, markings must be specified**	46048–9
D1	as above, except with base nuts and washers only	46048–9
E	Fuse Block Complete, porcelain, for 0–30 amp., 250 volt cartridge fuse, has No. 14–24 terminal posts	50037–3 Gr. 1
E1	as above, except with fuse clips and base nuts only	50037–3 Gr. 3
F	Terminal Block Complete, with connector, has No. 14–24 terminal posts	46048–21 Gr. 2
F1	as above, except without connector	46048–21 Gr. 1
F2	same as Fig. F, except with base nuts only	46048–21 Gr. 6
G	Terminal Block Complete, with connector and celluloid tag, has No. 14–24 terminal posts	46048–22 Gr. 5
G1	as above, except with connector but without celluloid tag	46048–22 Gr. 2
G2	same as Fig. G, except without connector	46048–22 Gr. 1
G3	same as Fig. G2, except with base nut only	46048–22 Gr. 7

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY November 1954

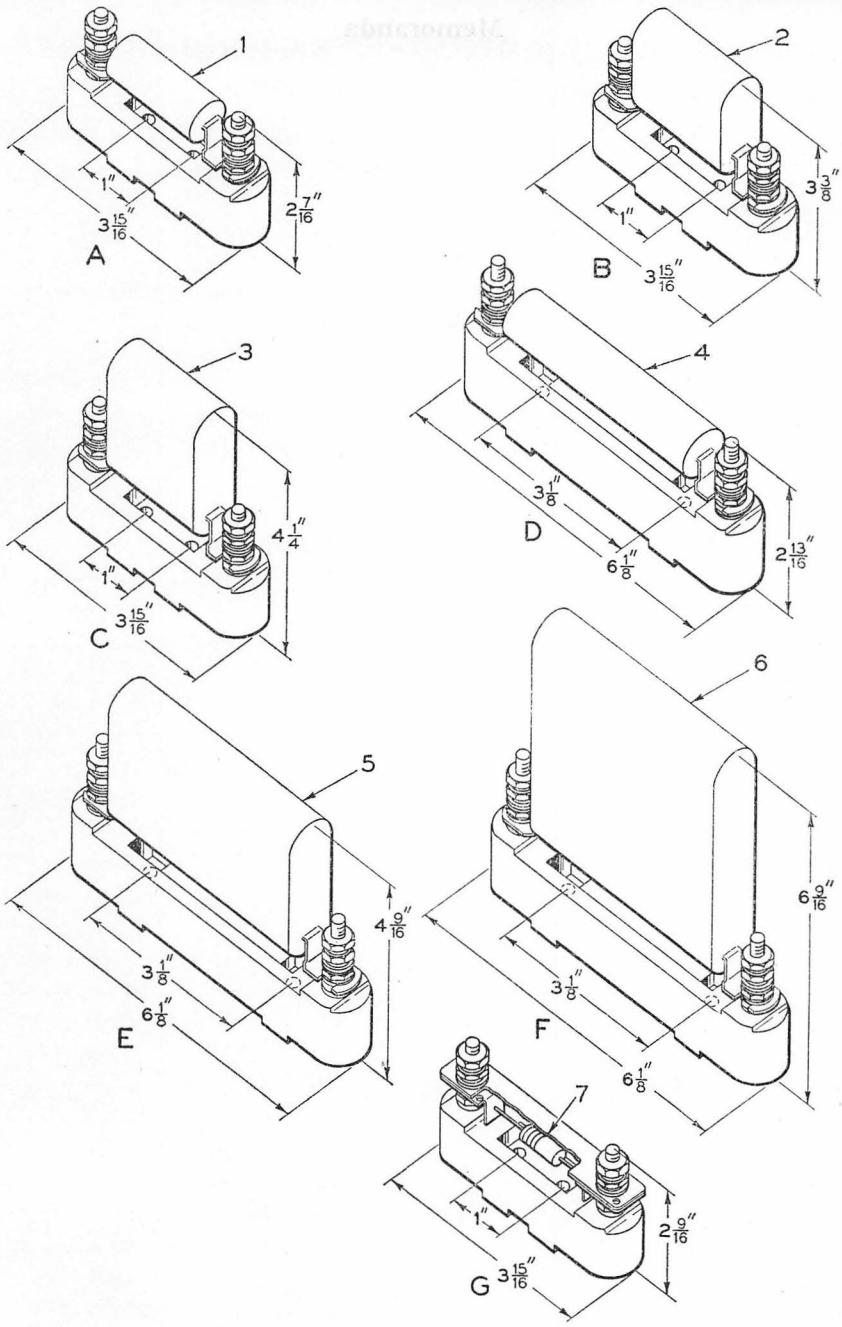
Fuse and Terminal Blocks

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
H	Fuse Block Complete, bakelite, for 0–30 amp., 250 volt cartridge fuse, has No. 14–24 terminal posts	50037–4 Gr. 2
H1	as above, except with fuse clips and base nuts only	50037–4 Gr. 1
J	Terminal Block Complete, has No. 14–24 terminal posts, nuts, and washers. **If tags are required, markings must be specified.**	46048–9
J1	as above, except with base nuts and washers only	46048–9
1	Connector, only. A.A.R., 1″ centers	43587–6
2	Fuse Clip Complete, two required	1891–4 Gr. 1
3	Connector, for use with celluloid tag	43587–8
3a	as above, except solid connector, 2⅜″ centers	43587–7

Memoranda

PLATE E1121



Resistors Mounted on Porcelain Blocks

November 1954 GENERAL RAILWAY SIGNAL COMPANY

Resistors Mounted on Porcelain Blocks

No. 14-24 Terminal Posts

Note: Current values (amperes) are shown for a temperature rise of 75°C (135°F) above room temperature of 20°C (68°F) except for Fig. G which is rated on 62°C (111°F) rise.

Supersedes Plates N1301, N1303, N1305 and N1306

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Resistor Complete				Resistor Only	
Fig. No.	Res. Ohms	Amps.	Drawing Reference	Fig. No.	Drawing Reference
A	0.5	4.47	50482–3 Gr. 30	1	53587
A1	0.6	4.08	50482–3 Gr. 43	1a	53587–13
A2	1	3.16	50482–3 Gr. 31	1b	53587–1
A3	1.2	2.89	50482–3 Gr. 54	1c	53587–29
A4	1.5	2.58	50482–3 Gr. 37	1d	53587–7
A5	2	2.24	50482–3 Gr. 58	1e	53587–32
A6	2.5	2.00	50482–3 Gr. 41	1f	53587–11
A7	3	1.83	50482–3 Gr. 35	1g	53587–5
A8	5	1.41	50482–3 Gr. 32	1h	53587–2
A9	8	1.12	50482–3 Gr. 64	1i	53587–38
A10	10	1.0	50482–3 Gr. 33	1j	53587–3
A11	12	0.913	50482–3 Gr. 66	1k	53587–39
A12	15	0.816	50482–3 Gr. 44	1m	53587–16
A13	20	0.707	50482–3 Gr. 55	1n	53587–19
A14	25	0.632	50482–3 Gr. 34	1p	53587–4
A15	30	0.577	50482–3 Gr. 50	1q	53587–14
A16	45	0.472	50482–3 Gr. 62	1r	53587–37
A17	50	0.447	50482–3 Gr. 39	1s	53587–9
A18	62	0.402	50482–3 Gr. 63	1t	53587–33
A19	75	0.365	50482–3 Gr. 51	1u	53587–27
A20	100	0.316	50482–3 Gr. 40	1v	53587–10
A21	125	0.283	50482–3 Gr. 48	1w	53587–25
A22	150	0.258	50482–3 Gr. 38	1x	53587–8
A23	175	0.239	50482–3 Gr. 49	1y	53587–26
A24	200	0.224	50482–3 Gr. 56	1z	53587–21

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY November 1954

Resistors Mounted on Porcelain Blocks

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Resistor Complete				Resistor Only	
Fig. No.	Res. Ohm	Amps.	Drawing Reference	Fig. No.	Drawing Reference
A25	250	0.200	50482–3 Gr. 52	**1aa**	53587–20
A26	300	0.182	50482–3 Gr. 59	**1ab**	53587–34
A27	350	0.169	50482–3 Gr. 36	**1ac**	53587–6
A28	400	0.158	50482–3 Gr. 65	**1ad**	53587–22
A29	500	0.141	50482–3 Gr. 60	**1ae**	53587–15
B	800	0.133	50482–10 Gr. 5	**2**	56086–19
B1	850	0.128	50482–10 Gr. 4	**2a**	56086–18
B2	1000	0.118	50482–10 Gr. 1	**2b**	56086–1
C	1	4.35	50482–15 Gr. 3	**3**	
C1	10	1.38	50482–15 Gr. 1	**3a**	
C2	25	0.87	50482–15 Gr. 4	**3b**	
C3	50	0.61	50482–15 Gr. 7	**3c**	
C4	100	0.436	50482–15 Gr. 2	**3d**	
C5	200	0.276	50482–15 Gr. 5	**3e**	
C6	300	0.250	50482–15 Gr. 6	**3f**	
D	1	4.0	50482–4 Gr. 24	**4**	55291–12
D1	5	1.79	50482–4 Gr. 28	**4a**	55291–15
D2	10	1.26	50482–4 Gr. 25	**4b**	55291–13
D3	15	1.033	50482–4 Gr. 29	**4c**	55291–16
D4	25	0.80	50482–4 Gr. 27	**4d**	55291–14
D5	50	0.57	50482–4 Gr. 20	**4e**	55291–9
D6	100	0.40	50482–4 Gr. 21	**4f**	55291–10
D7	200	0.28	50482–4 Gr. 26	**4g**	55291–3
D8	300	0.23	50482–4 Gr. 22	**4h**	55291–7
D9	450	0.189	50482–4 Gr. 31	**4k**	55291–20
D10	500	0.18	50482–4 Gr. 23	**4m**	55291–11
D11	1000	0.126	50482–4 Gr. 30	**4n**	55291–1

(Continued on following page)

November 1954 GENERAL RAILWAY SIGNAL COMPANY

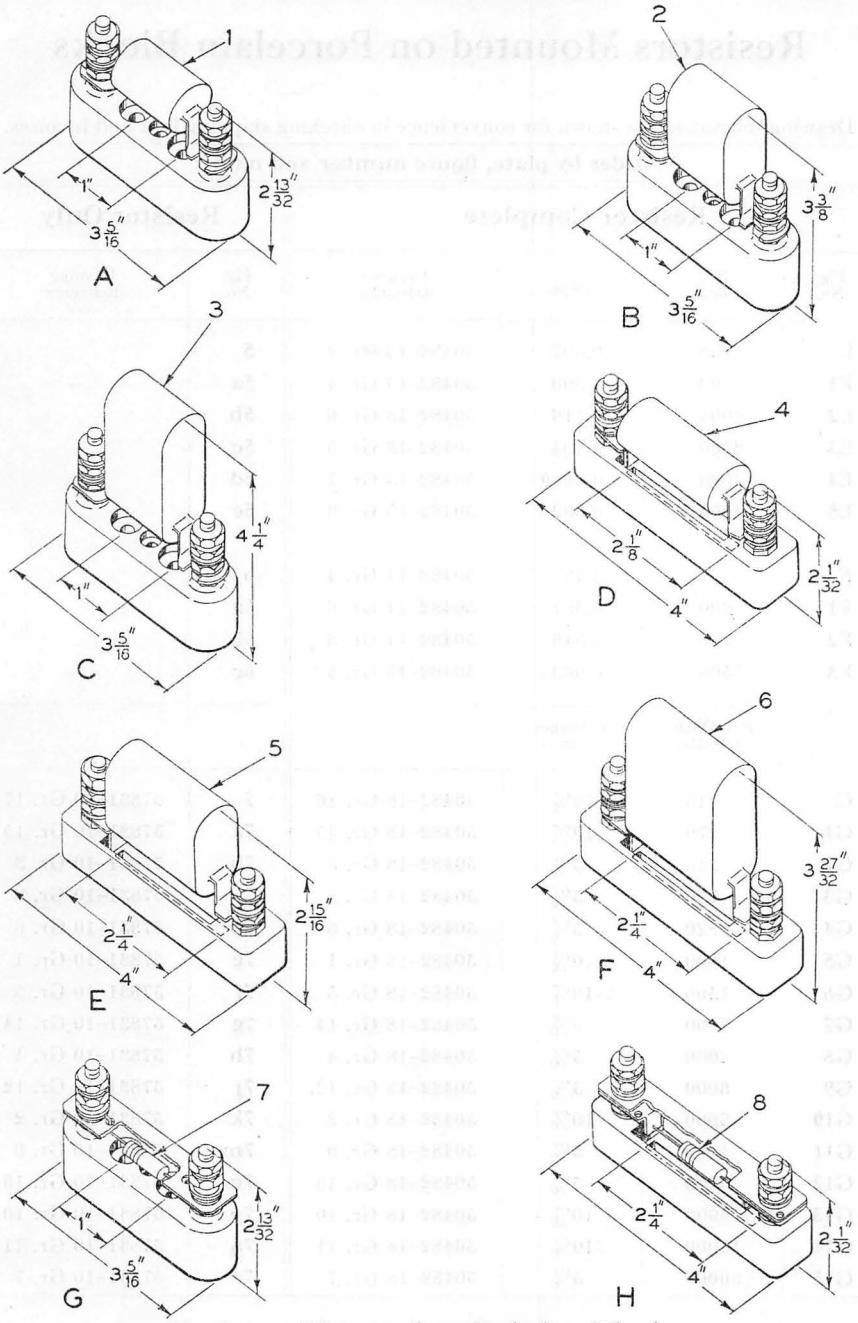
Resistors Mounted on Porcelain Blocks

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Resistor Complete				Resistor Only	
Fig. No.	Res. Ohms	Amps.	Drawing Reference	Fig. No.	Drawing Reference
E	200	0.3675	50482–13 Gr. 2	5	
E1	300	0.300	50482–13 Gr. 4	5a	
E2	2000	0.116	50482–13 Gr. 6	5b	
E3	2500	0.104	50482–13 Gr. 5	5c	
E4	3000	0.0949	50482–13 Gr. 7	5d	
E5	4000	0.082	50482–13 Gr. 3	5e	
F	1	5.48	50482–14 Gr. 4	6	
F1	200	0.387	50482–14 Gr. 6	6a	
F2	250	0.346	50482–14 Gr. 3	6b	
F3	7500	0.0633	50482–14 Gr. 5	6c	
	Res. Ohms (2 Watts)	Tolerance + or −			
G	10	10%	50482–18 Gr. 16	7	57831–10 Gr. 17
G1	270	10%	50482–18 Gr. 15	7a	57831–10 Gr. 15
G2	510	5%	50482–18 Gr. 3	7b	57831–10 Gr. 3
G3	750	5%	50482–18 Gr. 8	7c	57831–10 Gr. 8
G4	820	5%	50482–18 Gr. 6	7d	57831–10 Gr. 6
G5	1000	10%	50482–18 Gr. 1	7e	57831–10 Gr. 1
G6	1500	10%	50482–18 Gr. 5	7f	57831–10 Gr. 5
G7	1500	5%	50482–18 Gr. 14	7g	57831–10 Gr. 14
G8	2000	5%	50482–18 Gr. 4	7h	57831–10 Gr. 4
G9	3000	5%	50482–18 Gr. 12	7j	57831–10 Gr. 12
G10	3900	10%	50482–18 Gr. 2	7k	57831–10 Gr. 2
G11	5100	5%	50482–18 Gr. 9	7m	57831–10 Gr. 9
G12	6200	5%	50482–18 Gr. 13	7n	57831–10 Gr. 13
G13	10000	10%	50482–18 Gr. 10	7p	57831–10 Gr. 10
G14	15000	10%	50482–18 Gr. 11	7q	57831–10 Gr. 11
G15	30000	5%	50482–18 Gr. 7	7r	57831–10 Gr. 7

PLATE E1123



Resistors Mounted on Bakelite Blocks

November 1954 GENERAL RAILWAY SIGNAL COMPANY

Resistors Mounted on Bakelite Blocks

No. 14-24 Terminal Posts

Note: Current values (amperes) are shown for a temperature rise of 75°C (135°F) above room temperature of 20°C (68°F) except Figures G and H which are rated on 62°C (111°F) rise.

Supersedes Plates N1301, N1303, N1305 and N1306

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Resistor Complete				Resistor Only	
Fig. No.	Res. Ohms	Amps.	Drawing Reference	Fig. No.	Drawing Reference
A	1	2.83	50482–8 Gr. 24	1	55592–15
A1	2	2.00	50482–8 Gr. 18	1a	55592–22
A2	3	1.63	50482–8 Gr. 16	1b	55592–5
A3	5	1.26	50482–8 Gr. 25	1c	55592–16
A4	5.9	1.16	50482–8 Gr. 19	1d	55592–31
A5	7.5	1.03	50482–8 Gr. 17	1e	55592–30
A6	10	0.895	50482–8 Gr. 11	1f	55592–8
A7	15	0.730	50482–8 Gr. 22	1g	55592–9
A8	20	0.633	50482–8 Gr. 21	1h	55592–33
A9	25	0.565	50482–8 Gr. 1	1j	55592
A10	35	0.475	50482–8 Gr. 23	1k	55592–34
A11	50	0.400	50482–8 Gr. 8	1m	55592–6
A12	75	0.326	50482–8 Gr. 3	1n	55592–13
A13	100	0.283	50482–8 Gr. 5	1p	55592–7
A14	125	0.253	50482–8 Gr. 20	1q	55592–32
A15	150	0.231	50482–8 Gr. 14	1r	55592–4
A16	175	0.214	50482–8 Gr. 4	1s	55592–18
A17	200	0.200	50482–8 Gr. 10	1t	55592–25
A18	250	0.179	50482–8 Gr. 7	1u	55592–3
A19	300	0.163	50482–8 Gr. 15	1v	55592–19
B	750	0.131	50482–24 Gr. 1	2	10455
C	400	0.200	50482–17 Gr. 4	3	58878–3
C1	500	0.179	50482–17 Gr. 2	3a	58878–1

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY November 1954

Resistors Mounted on Bakelite Blocks

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Resistor Complete				Resistor Only	
Fig. No.	Res. Ohms	Amps.	Drawing Reference	Fig. No.	Drawing Reference
C2	750	0.146	50482–17 Gr. 1	3b	58878
C3	1000	0.126	50482–17 Gr. 3	3c	58878–2
D	1	3.16	50482–9 Gr. 3	4	53587–1
D1	10	1.00	50482–9 Gr. 2	4a	53587–3
D2	12	0.913	50482–9 Gr. 8	4b	53587–39
D3	50	0.447	50482–9 Gr. 10	4c	53587–9
D4	75	0.365	50482–9 Gr. 7	4d	53587–27
D5	100	0.316	50482–9 Gr. 4	4e	53587–10
D6	200	0.224	50482–9 Gr. 6	4f	53587–21
D7	250	0.200	50482–9 Gr. 11	4g	53587–20
D8	500	0.141	50482–9 Gr. 9	4h	53587–15
E	10	1.18	50482–12 Gr. 1	5	56086–2
E1	20	0.836	50482–12 Gr. 11	5a	56086–14
E2	25	0.748	50482–12 Gr. 2	5b	56086–3
E3	50	0.529	50482–12 Gr. 3	5c	56086–4
E4	100	0.374	50482–12 Gr. 4	5d	56086–5
E5	125	0.335	50482–12 Gr. 5	5e	56086–6
E6	150	0.305	50482–12 Gr. 6	5f	56086–7
E7	200	0.265	50482–12 Gr. 7	5g	56086–8
E8	300	0.216	50482–12 Gr. 12	5h	56086–16
E9	600	0.153	50482–12 Gr. 13	5j	56086–17
E10	800	0.133	50482–12 Gr. 15	5k	56086–19
E11	850	0.128	50482–12 Gr. 14	5m	56086–18
E12	1000	0.118	50482–12 Gr. 10	5n	56086–1
F	1	4.35	50482–19 Gr. 3	6	58787–2
F1	10	1.38	50482–19 Gr. 1	6a	58787
F2	25	0.87	50482–19 Gr. 4	6b	58787–3
F3	100	0.436	50482–19 Gr. 2	6c	58787–1
F4	1500	0.11	50482–19 Gr. 5	6d	58787–4

(Continued on following page)

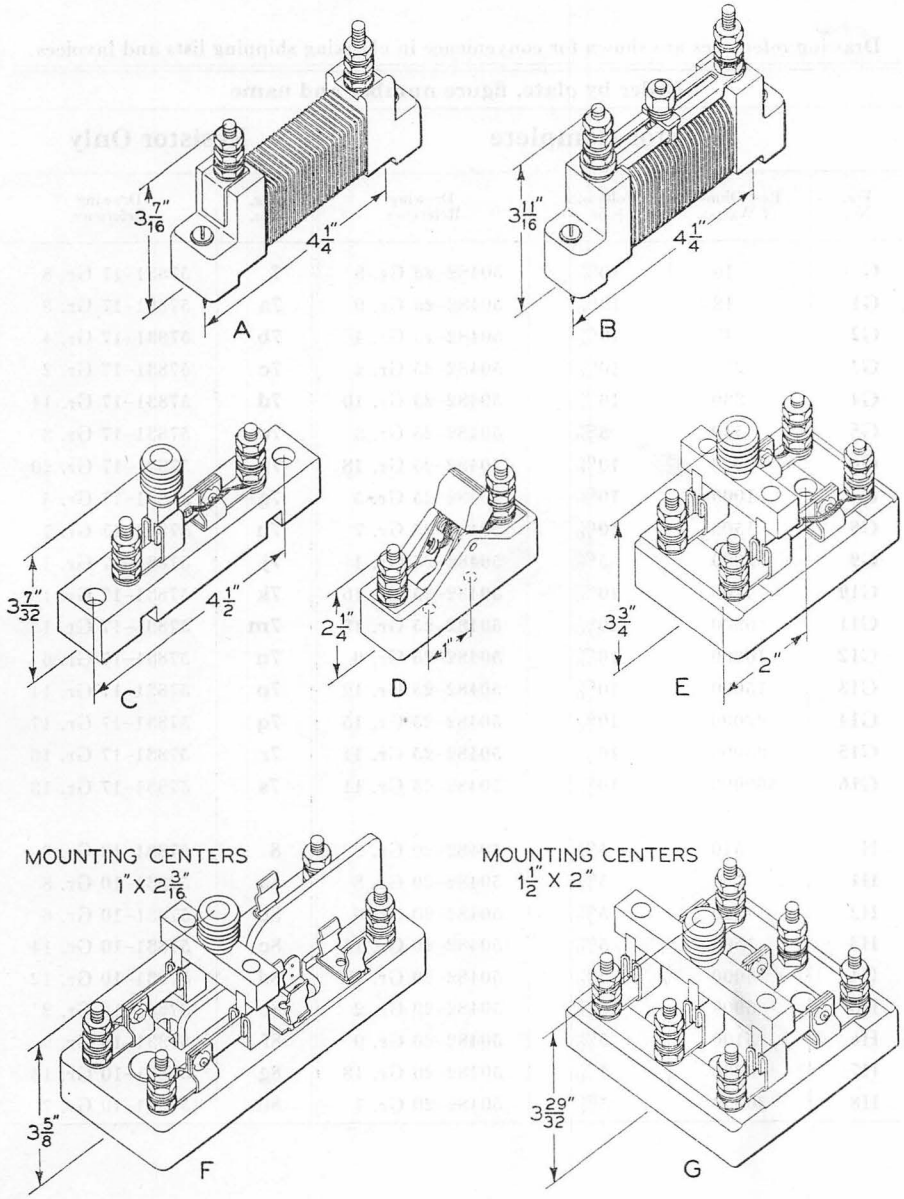
November 1954 GENERAL RAILWAY SIGNAL COMPANY

Resistors Mounted on Bakelite Blocks

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Resistor Complete				Resistor Only	
Fig. No.	Res. Ohms (2 Watts)	Tolerance + or −	Drawing Reference	Fig. No.	Drawing Reference
G	10	10%	50482–25 Gr. 8	7	57831–17 Gr. 8
G1	18	10%	50482–25 Gr. 9	7a	57831–17 Gr. 9
G2	47	10%	50482–25 Gr. 4	7b	57831–17 Gr. 4
G3	270	10%	50482–25 Gr. 2	7c	57831–17 Gr. 2
G4	330	10%	50482–25 Gr. 10	7d	57831–17 Gr. 11
G5	510	5%	50482–25 Gr. 3	7e	57831–17 Gr. 3
G6	820	10%	50482–25 Gr. 18	7f	57831–17 Gr. 20
G7	1000	10%	50482–25 Gr. 5	7g	57831–17 Gr. 5
G8	1500	10%	50482–25 Gr. 7	7h	57831–17 Gr. 7
G9	2000	5%	50482–25 Gr. 1	7j	57831–17 Gr. 1
G10	4700	10%	50482–25 Gr. 16	7k	57831–17 Gr. 18
G11	6800	10%	50482–25 Gr. 13	7m	57831–17 Gr. 15
G12	10000	10%	50482–25 Gr. 6	7n	57831–17 Gr. 6
G13	15000	10%	50482–25 Gr. 12	7p	57831–17 Gr. 14
G14	22000	10%	50482–25 Gr. 15	7q	57831–17 Gr. 17
G15	33000	10%	50482–25 Gr. 14	7r	57831–17 Gr. 16
G16	560000	10%	50482–25 Gr. 11	7s	57831–17 Gr. 13
H	510	5%	50482–20 Gr. 3	8	57831–10 Gr. 3
H1	750	5%	50482–20 Gr. 8	8a	57831–10 Gr. 8
H2	820	5%	50482–20 Gr. 6	8b	57831–10 Gr. 6
H3	1500	5%	50482–20 Gr. 14	8c	57831–10 Gr. 14
H4	3000	5%	50482–20 Gr. 12	8d	57831–10 Gr. 12
H5	3900	10%	50482–20 Gr. 2	8e	57831–10 Gr. 2
H6	5100	5%	50482–20 Gr. 9	8f	57831–10 Gr. 9
H7	6200	5%	50482–20 Gr. 13	8g	57831–10 Gr. 13
H8	30000	5%	50482–20 Gr. 7	8h	57831–10 Gr. 7



Resistors and Switches

November 1954 GENERAL RAILWAY SIGNAL COMPANY

Fixed Resistors
Adjustable Resistors
Switches

Supersedes Plate E1101

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Type T Fixed Resistor (No. 14-24 Terminal Posts)
15 watts continuous capacity for 75° centigrade

Fig. No.	Resistance—Ohms	Drawing Reference
A	0.2	46450–17 Gr. 6
A1	0.6	46450–17 Gr. 2
A2	0.75	46450–17 Gr. 3
A3	1.0	46450–17 Gr. 4
A4	1.25	46450–17 Gr. 5
A5	5.9	46450–17 Gr. 1

Type T Adjustable Resistor (No. 14-24 Terminal Posts)
15 watts continuous capacity for 75° centigrade rise

Fig. No.	Resistance—Ohms	Adjustment	Drawing Reference
B	0.635	.027	46450–20 Gr. 1
B1	0.70	.034	46450–23 Gr. 2
B2	0.80	.034	46450–20 Gr. 2
B3	1.00	.043	46450–20 Gr. 3
B4	1.28	.054	46450–20 Gr. 4
B5	1.4	.069	46450–23 Gr. 1
B6	1.62	.069	46450–20 Gr. 5
B7	2.00	.085	46450–20 Gr. 6
B8	3.91	.085	46450–21 Gr. 1
B9	4.95	.107	46450–21 Gr. 2
B10	6.25	.134	46450–21 Gr. 3
B11	6.9	.170	46450–23 Gr. 3
B12	7.95	.171	46450–21 Gr. 4
B13	9.95	.214	46450–21 Gr. 5

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY November 1954

Fixed Resistors
Adjustable Resistors
Switches

Drawing references are shown for convenience in checking shipping lists and invoices.

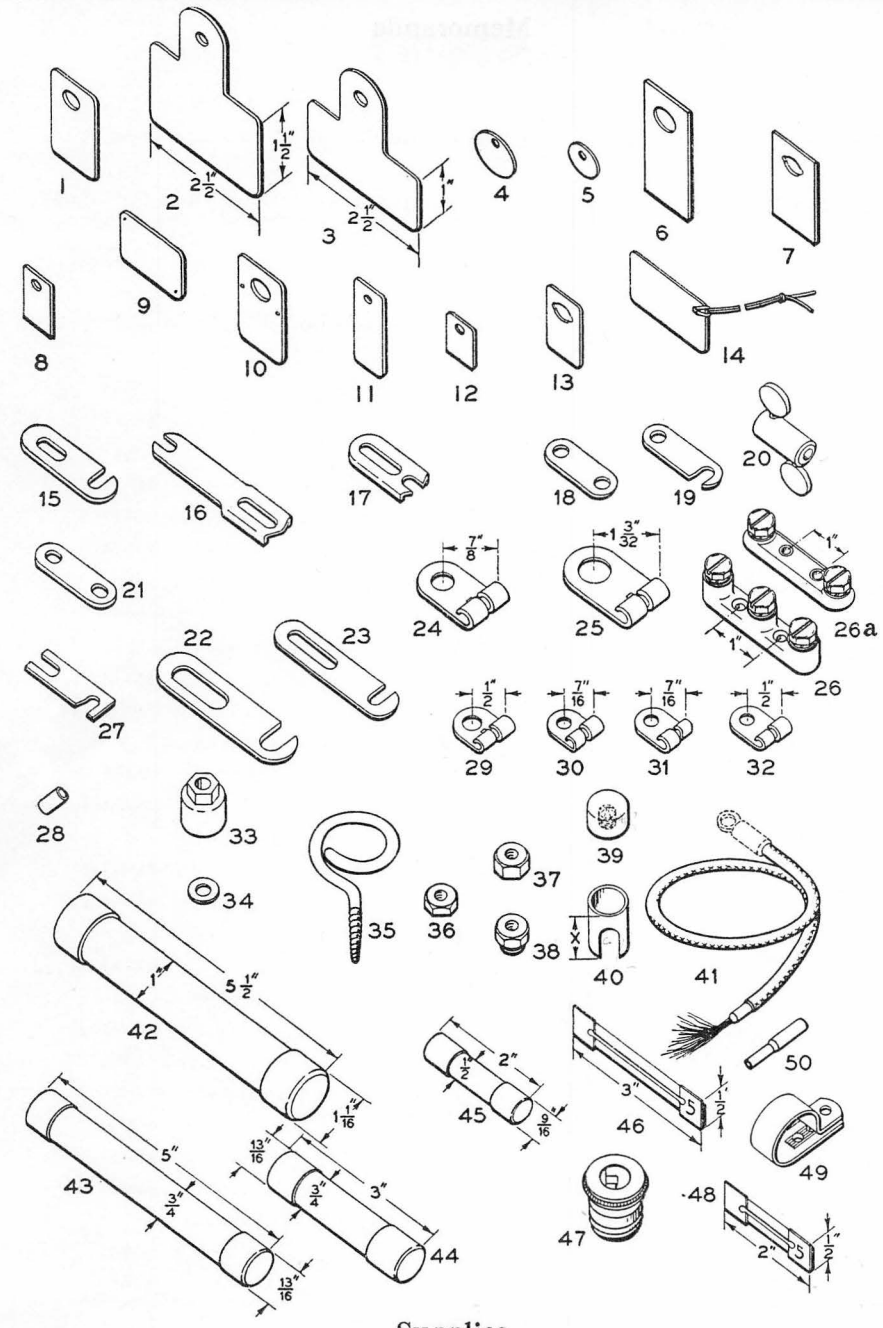
Order by plate, figure number and name

Fig. No.	Resistance—Ohms	Adjustment	Drawing Reference
B14	12.55	.270	46450–21 Gr. 6
B15	15.8	.340	46450–21 Gr. 7
B16	17.5	.377	46450–22 Gr. 1
B17	21.8	.470	46350–22 Gr. 2
B18	27.7	.595	46450–22 Gr. 3
B19	34.8	.750	46450–22 Gr. 4
B20	44.2	.950	46450–22 Gr. 5
B21	55.8	1.20	46450–22 Gr. 6
B22	69.8	1.50	46450–22 Gr. 7
B23	87.5	1.88	46450–22 Gr. 8
B24	111.5	2.40	46450–22 Gr. 9

Fig. No.	Name	Drawing Reference
C	Switch Complete, single pole, single throw	53615–2 Gr. 1
D	Switch Complete, single pole, with return spring, used as test switch	56490 Gr. 1
D1	as above, except without return spring	56490 Gr. 2
E	Switch Complete, double pole, single throw, disconnecting	53615 Gr. 1
F	Switch Complete, fused, with barrier, double pole, single throw, 125 volts	53615–3 Gr. 1
F1	as above, except without barrier	53615–3 Gr. 2
G	Switch Complete, three pole, single throw	53615–1 Gr. 1

Memoranda

PLATE E1129



Supplies

Supplies

Note: Supersedes Plate E1105, E1107, E1109 and N1403.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
1	Tag, 1″ x 1½″ with ⅜″ dia. hole, grey fibre, with marking as specified	15311
1a	as above, except black	15311–1
1b	same as Fig. 1, except red	15311–2
2	Tag, with 17/64″ dia. hole, black fibre, with marking as specified.	15311–3
3	Tag, with 17/64″ dia. hole, white fibre, with marking as specified.	15311–4
3a	as above, except black fibre	15311–7
4	Tag, .978″ dia. 1/32″ tk., with 5/32″ dia. hole, aluminum, with marking as specified	30569–1
5	Tag, 33/64″ dia. x 1/16″ tk., with 3/16″ dia. hole, black fibre, with marking as specified	34558
5a	as above, except grey fibre	34558–327
6	Tag, 1″ x 2″ with 7/16″ dia. hole, red fibre, with marking as specified	38454
6a	as above, except black fibre	38454–1
7	Tag, 1″ x 1½″, with ⅜″ dia. slotted hole to pass-over eyelet, black fibre, with marking as specified	44983–1
7a	as above, except white fibre	44983–21
8	Tag, ⅝″ x 1″ with ¼″ dia. hole, black fibre, with marking as specified	44983–31
9	Tag, ⅞″ x 1 1/16″ with two .0635 dia. holes in opposite corners, black fibre, with marking as specified	44983–41
9a	as above, except white fibre	44983–51
10	Tag, 1″ x 1½″ with ½″ dia. hole, grey fibre, with marking as specified	46684
10a	as above, except black	46684–1
10b	same as Fig. 10, except white	46684–2
11	Tag, ⅝″ x 1½″ with ⅛″ dia. hole, grey fibre, with marking as specified	46685
11a	as above, except black fibre	46685–2

(Continued on following page)

Supplies

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
11b	same as Fig. 11, except red fibre	46685–3
12	Tag, 5/8″ x 3/4″ with 3/8″ dia. hole, black fibre, with marking as specified	44983–5
13	Tag, 3/4″ x 1 1/8″ with 3/8″ slotted hole to pass over eyelet, black fibre, with marking as specified	44983
13a	as above, except grey fibre	44983–4
13b	same as Fig. 13, except red fibre	44983–15
14	Tag, 7/8″ x 1 3/4″ with loop, black fibre, with marking as specified	56115 Gr. 1
15	Connector, 1 1/4″ centers for No. 14 or 1/4″ screw	38597
16	Terminal Block Connector, 2 3/8″ centers, white nickel, for No. 14 or 1/4″ screw	43587–7
16a	as above, except for use with celluloid tog	43587–8
17	Terminal Block Connector, 1″ centers, white nickel, for No. 14 or 1/4″ screw	43587–6
18	Terminal Connector, 7/8″ centers, white nickel, for No. 14 or 1/4″ screw	4906–148
18a	as above, except 15/16″ centers	4906–120
18b	same as Fig. 18, except 1″ centers	4906–20
18c	same as Fig. 18, except 1 1/16″ centers	4906–119
18d	same as Fig. 18, except 1 1/8″ centers	4906–21
18e	same as Fig. 18, except 1 9/16″ centers	4906–52
18f	same as Fig. 18, except 2″ centers	4906–47
18g	same as Fig. 18, except 2 1/8″ centers	4906–117
18h	same as Fig. 18, except 2 3/8″ centers	4906–38
18i	same as Fig. 18, except 2 1/2″ centers	4906–67
18k	same as Fig. 18, except 3 3/4″ centers	4906–70
18m	same as Fig. 18, except 4 3/8″ centers	4906–22
18n	same as Fig. 18, except 5″ centers	4906–71
18p	same as Fig. 18, except 6 1/4″ centers	4906–72
18q	same as Fig. 18, except 7 1/2″ centers	4906–73

(Continued on following page)

Supplies

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
19	Terminal Connector, 1⅛″ centers, white nickel, for No. 14 or ¼″ screw	4906–34
20	Connector Complete, as shown, with 3/16″ I.D. hole, screws No. 10–32	18643–8 Gr. 1
20a	as above, except with ¼″ I.D. hole	18643–8 Gr. 2
21	Connector, 1 3/16″ centers, white nickel, for No. 14 screw	4906–97
22	Connector, 2 1/16″ centers, white nickel, for ⅜″ screw	46413
23	Connector, 1⅞″ centers, white nickel, for No. 14 or ¼″ screw.	43239
24	Terminal, tinned copper, for No. 6 wire and ⅜″ screw	5081
25	Terminal, tinned copper, for No. 6 wire and ½″ screw	5080
26	Connector Complete, 1″ centers, screw No. 14–24 slotted hex. hd.	18643–6 Gr. 3
26a	Connector Complete, 1¾″ centers, screws No. 14–24 slotted hex. hd.	18643–5 Gr. 3
27	Connector, 1 5/16″ centers, white nickel, for No. 14 or ¼″ screw.	29288–1
28	Wire Protector, 7/16″ long, ¼″ inside dia.	56274
28a	as above, except 3/16″ inside dia.	56274–1
29	Terminal, copper, for No. 8 wire and ⅜″ screw. Grips both wire and insulation	1408
30	Terminal, tinned copper, for No. 16 wire and No. 14 or ¼″ screw. Grips both wire and insulation	48130
31	Terminal, tinned copper, for No. 16 wire and No. 14 or ¼″ screw. Grips both wire and insulation	48131
32	Terminal, tinned copper, for No. 16 wire and No. 14 or ¼″ screw. Grips both wire and insulation	47850
33	Insulated Terminal Post Nut, No. 14–24 threads	56482
34	Washer, white nickel, for No. 14 terminal posts	1225–2
35	Bridle Ring, enameled, ⅝″ dia. eye	51340–2
35a	as above, except 1¼″ dia. eye	51340–1
35b	same as Fig. 35, except 1⅝″ dia. eye	51340
35c	same as Fig. 35, except 3″ dia. eye	51340–3
36	Nut, No. 14–24 x ⅛″ tk. hex., white nickel	46989–2

(Continued on following page)

GENERAL RAILWAY SIGNAL COMPANY November 1954

Supplies

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
37	Nut, No. 14–24 x 3/16″ tk. hex., white nickel	42839–5
38	Nut, No. 14–24 x 5/16″ tk. hex., white nickel	42843–1
39	Button, black, insulation for No. 14 terminal post	29493
39a	as above, except red	29493–16
40	Shield, 1 1/16″ long, insulation for No. 14 terminal post	47474
40a	as above, except 1 3/16″ long	47474–10
40b	same as Fig. 40, except 1 7/16″ long	47474–9
41	Signal Wire, A.A.R. No. 14 single conductor, 7/32″ outside dia. Specify number of feet required	MS2–111
42	Cartridge Fuse, N.E.C. Std. ferrule contact type, non-indicating, non-renewable, 600 volts A.C. or D.C., 35 ampere	54873–35
	40 ampere	54873–40
	45 ampere	54873–45
	50 ampere	54873–50
	60 ampere	54873–60
42a	as above, except fusetron, 35 ampere	55782–16
	40 ampere	55782–17
	45 ampere	55782–18
	50 ampere	55782–19
	60 ampere	55782–20
43	Cartridge Fuse, N.E.C. Std. ferrule contact type, non-indicating, non-renewable, 600 volts A.C. or D.C.	
	1 ampere	54872–1
	3 ampere	54872–3
	6 ampere	54872–6
	10 ampere	54872–10
	15 ampere	54872–15
	20 ampere	54872–20
	25 ampere	54872–25
	30 ampere	54872–30

(*Continued on following page*)

Supplies

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
43a	same as Fig. 43, except fusetron, 1 ampere	55782
	1.25 ampere	55782–1
	1.6 ampere	55782–2
	2 ampere	55782–3
	2.5 ampere	55782–4
	3.2 ampere	55782–5
	4 ampere	55782–6
	5 ampere	55782–7
	6.25 ampere	55782–8
	8 ampere	55782–9
	10 ampere	55782–10
	12 ampere	55782–11
	15 ampere	55782–12
	20 ampere	55782–13
	25 ampere	55782–14
	30 ampere	55782–15
44	Cartridge Fuse, N.E.C. Std. ferrule contact type, non-indicating, non-renewable, 250 volts A.C. or D.C.	
	35 ampere	54871–35
	40 ampere	54871–40
	45 ampere	54871–45
	50 ampere	54871–50
	60 ampere	54871–60
44a	as above, except fusetron, 35 ampere	56449–16
	40 ampere	56449–17
	45 ampere	56449–18
	50 ampere	56449–19
	60 ampere	56449–20

(*Continued on following page*)

Supplies

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
45	Cartridge Fuse, N.E.C. Std. ferrule contact type, non-indicating, non-renewable, 250 volts A.C. or D.C.	
	1 ampere	54870–1
	3 ampere	54870–3
	6 ampere	54870–6
	10 ampere	54870–10
	15 ampere	54870–15
	20 ampere	54870–20
	25 ampere	54870–25
	30 ampere	54870–30
45a	as above, except fusetron, 1 ampere	56449
	1.25 ampere	56449–1
	1.6 ampere	56449–2
	2 ampere	56449–3
	2.5 ampere	56449–4
	3.2 ampere	56449–5
	4 ampere	56449–6
	5 ampere	56449–7
	6.25 ampere	56449–8
	8 ampere	56449–9
	10 ampere	56449–10
	12 ampere	56449–11
	15 ampere	56449–12
	20 ampere	56449–13
	25 ampere	56449–14
	30 ampere	56449–15
46	Fuse, mica protected, 250 volts, 5 ampere	40923
	10 ampere	4867
	12 ampere	2264

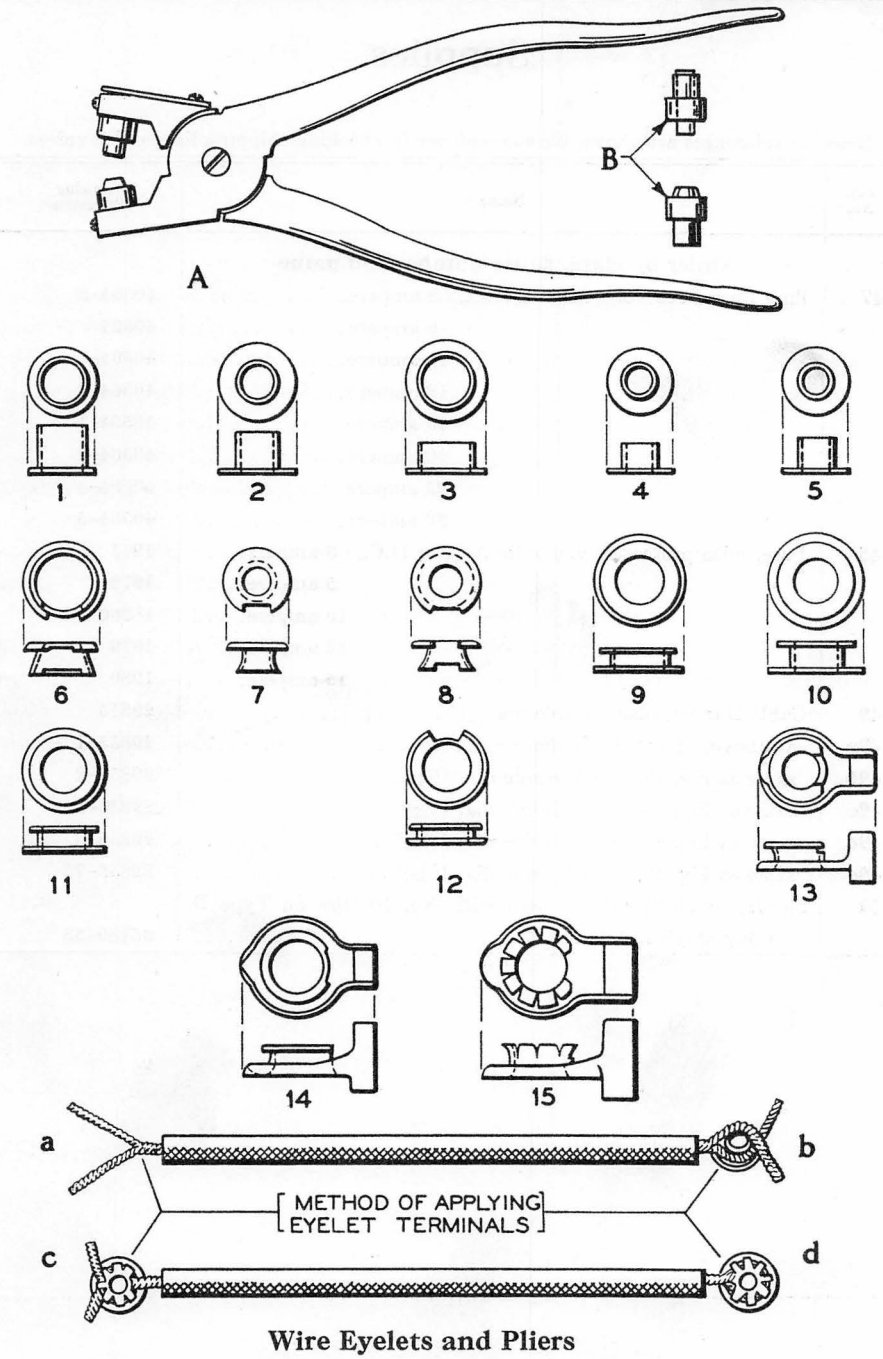
(Continued on following page)

Supplies

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
47	Plug Fuses, 125 volts A.C. or D.C., 3 ampere	40564–3
	6 ampere	40564
	10 ampere	40564–7
	12 ampere	40564–6
	15 ampere	40564–1
	20 ampere	40564–2
	25 ampere	40564–4
	30 ampere	40564–5
48	Fuse, mica protected, 250 volts A.C. or D.C., 3 ampere	1977
	5 ampere	1978
	10 ampere	18966
	12 ampere	1979
	15 ampere	1980
49	Cable Hanger, black, inside dia. $\frac{7}{16}''$	29855
49a	as above, except inside dia. $\frac{19}{32}''$	29855–1
49b	same as Fig. 49, except inside dia. $\frac{27}{32}''$	29855–2
49c	same as Fig. 49, except inside dia. $1\frac{3}{32}''$	29855–3
49d	same as Fig. 49, except inside dia. $1\frac{15}{32}''$	29855–5
49e	same as Fig. 49, except inside dia. $1\frac{31}{32}''$	29855–7
50	Sleeve, moulded rubber, used with No. 10 wire on Type B relay plugboard	35189–33

PLATE E1131



Wire Eyelets and Pliers

November 1954 GENERAL RAILWAY SIGNAL COMPANY

Wire Eyelets and Pliers

Supersedes Plate E1111

Note: The wire eyelets and pliers shown on opposite page afford a simple, inexpensive and efficient means for applying terminals to ends of wire which are to be connected to the binding posts of various mechanisms.

The eyelets are made for 3/16", 1/4", and 5/16" binding posts and are suitable, according to size, for number 8 to number 18 wire as listed below. Eyelets are made in four types: Figs. 1 to 5 have a plain rim; Figs. 6, 7 and 8 have a slotted rim, which, when the eyelet is formed leaves an open space at the shank where the wire joins the eyelet. Figs. 9 to 12 are the rolled type and Figs. 13 to 15 have clamping ears for fastening to the wire insulation.

The pliers are furnished with dies for either 3/16", 1/4", or 5/16" eyelets, the dies being interchangeable and easily removed. The pliers, are a well-finished, simple and substantial tool.

To apply the eyelets the wire is skinned and the strands separated as shown at *a*. An eyelet is inserted in the fork and the wires twisted together on the opposite side as shown at *b*. The eyelet and wire are placed over the lower die of the pliers, (the fixed die being on top) and pressed as shown at *c*. The ends of the wires should be nipped off close to the eyelet as shown at *d*.

If the terminal is properly formed the eyelet will grip the wire tightly; however, to insure best contact between wire and eyelet it is recommended that the terminals be dipped in solder to the center of the eyelet.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Eyelet Setting Pliers Complete, with one pair of dies for terminals for 1/4" posts	45786–11 Gr. 4
A1	as above, except with one pair of dies for terminals for 3/16" posts	45786–11 Gr. 3
A3	same as Fig. A, except with one pair of dies for terminals for 5/16" posts	45786–11 Gr. 5
A4	same as Fig. A, except without dies	45794–1
B	Dies Complete, for terminals for 1/4" posts	45795–3 52068–2 504–96

(*Continued on following page*)

GENERAL RAILWAY SIGNAL COMPANY November 1954

Wire Eyelets and Pliers

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
B1	same as Fig. B, except for terminals for 3/16″ posts	45795–2 52068–1 504–95
B2	same as Fig. B, except for terminals for 5/16″ posts	45795–4 53240 Gr. 1
1	Wire Eyelet, plain, for No. 14 post, takes No. 9, 10, 12 or 14 wire. Per hundred	47709
2	Wire Eyelet, plain, for No. 14 and 1/4″ posts, takes No. 10, 12 and 14 wire. Per hundred	49890
2a	as above, except takes No. 18 wire. Per hundred	37697
3	Wire Eyelet, plain for 1/4″ post, takes No. 14, 16 or 18 wire. Per hundred	41858
4	Wire Eyelet, plain, for No. 8 post, takes No. 14, 16 or 18 wire. Per hundred	41856
5	Wire Eyelet, plain, for No. 10 post, takes No. 12, 14 or 16 wire. Per hundred	41857
6	Wire Eyelet, slotted, for 1/4″ and 5/16″ posts, takes up to No. 10 wire. Per hundred	37695–1
6a	as above, except for No. 14 and 1/4″ posts, takes No. 14, 16 or 18 wire. Per hundred	37695–26
6b	same as Fig. 6 except annealed. Per hundred	37695–9
7	Wire Eyelet, slotted, for No. 8 post, takes No. 14, 16 or 18 wire. Per hundred	37695–38
8	Wire Eyelet, slotted, for No. 10 post, takes No. 14, 16 or 18 wire. Per hundred	37695–39
9	Wire Eyelet, rolled, for 1/4″ and 5/16″ posts, takes No. 14 wire. Per hundred	37695–5
10	Wire Eyelet, rolled, for No. 14 and 1/4″ posts, takes No. 10 wire. Per hundred	37695–8
11	Wire Eyelet, rolled for No. 14 and 1/4″ posts, takes No. 14 wire. Per hundred	37695–6

(Continued on following page)

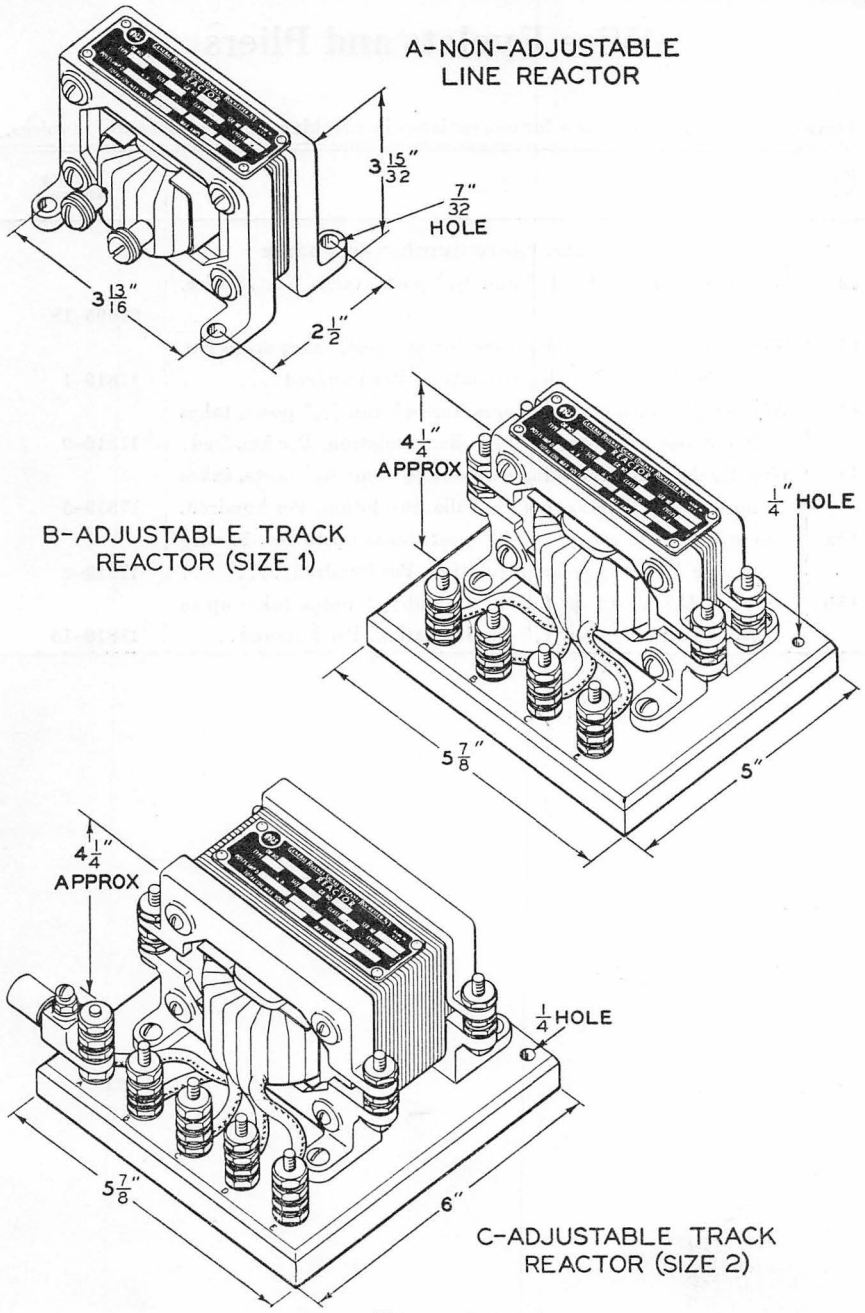
November 1954 GENERAL RAILWAY SIGNAL COMPANY

Wire Eyelets and Pliers

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
12	Wire Eyelet, rolled for ¼″ and 5/16″ posts, takes No. 18 wire. Per hundred	37695–18
13	Wire Eyelet, with clamping ears, for ¼″ post, takes up to No. 14 wire having 7/32″ dia. insulation. Per hundred	17819–1
14	Wire Eyelet, with clamping ears, for ¼″ and 5/16″ posts, takes No. 9 and 12 wire with 11/32″ dia. insulation. Per hundred.	17819–9
15	Wire Eyelet, with clamping ears, for ¼″ and 5/16″ posts, takes up to No. 9 wire having 11/32″ dia. insulation. Per hundred.	17819–5
15a	same as Fig. 15 except for ¼″ post, takes up to No. 14 wire having ¼″ to 5/16″ dia. insulation. Per hundred	17819–2
15b	same as Fig. 15 except for No. 10 and 3/16″ posts, takes up to No. 14 wire having 5/32″ dia. insulation. Per hundred	17819–15

PLATE E1139



Reactors

November 1954 GENERAL RAILWAY SIGNAL COMPANY

Non-Adjustable Line Reactors
Adjustable Track Reactors

Supersedes Plate N1311

Non-adjustable Line Reactors

Note: Non-adjustable Line Reactors Fig. A to A7 inclusive are for use in series connection with the local phase of the A.C. two element relay thereby giving a better phase displacement between the local and track phases and decreasing the amount of current required by the track circuit. They are for use principally where track circuit conditions are unfavorable, such as long track circuits and poor ballast.

The capacity is limited to 0.050 kv-a. at 60 cycles and 0.025 kv-a. at 25 cycles. If impedance other than those listed is desired, the following information must be given:

1—Frequency of current.

2—Impedance desired.

3—Amount of current reactor must carry.

Adjustable Track Reactors

Note: Adjustable Track Reactors Fig. B and Fig. C are for use on steam road track circuits between the transformer and track to limit the flow of current when the track circuit is occupied. When thus used, a better phase relation is obtained between the currents in the local and track phases of the relay thereby decreasing the amount of current required by the track circuit. These reactors can carry continuously 5 amperes without undue over-heating and double this amount for short periods.

The coil is wound with three taps and the terminal board equipped with five terminal posts as shown, making it possible to vary the impedance over a wide range without changing the air gap. Standard impedance obtainable are as follows:

25 cycles, 0.75—1.50—2.25 and 3.00 ohms.

60 cycles, 1.00—2.00—3.00 and 4.00 ohms.

Further variation from above impedances can be obtained by adjusting the air gap between the two parts of the iron core, by means of adjusting screws provided for that purpose.

When it is desired to duplicate a reactor or when ordering repair parts, always refer to name plate of reactor in question and give drawing number and other data shown thereon.

(Continued on following page)

PLATE E1139

Line and Track Reactors

Drawing references are shown for convenience in checking shipping lists and invoices.

Order by plate, figure number and name

Non-adjustable Line Reactors

Fig. No.	Frequency	Normal Current	Volts	Impedance	Drawing Reference
A	25	0.58	30.0	52	42101 Gr. 1
A1	25	0.35	22.5	65	42101 Gr. 5
A2	25	0.25	50.0	200	42101 Gr. 9
A3	60	0.50	62.0	124	42101 Gr. 3
A4	60	0.30	81.0	270	42101 Gr. 4
A5	60	0.15	55.0	367	42101 Gr. 6
A6	60	0.30	52.5	175	42101 Gr. 7
A7	60	0.10	12.0	72–120	42101 Gr. 8

Adjustable Track Reactors (Size 1)

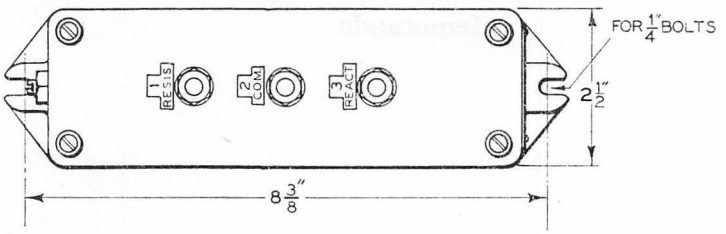
Fig. No.	Frequency	Normal Current	Volts	Impedance	Drawing Reference
B	25	8.0	10.0	.75–1.0–1.25	42100 Gr. 13
B1	60	3.0	12.0	2–3–4	42100 Gr. 1
B2	60	6.0	21.0	1.7–2.1–2.9–3.5	42100 Gr. 2
B3	60	1.5	75.0	28–35–50	42100 Gr. 3
B4	60	0.5	7.5	2.2–6.5–11–15	42100 Gr. 4
B5	60	3.0	6.0	1–1.5–2	42100 Gr. 5
B6	60	10.0	20.0	.75–1–1.5–2	42100 Gr. 7
B7	60	3.0	12.0	1–2–3–4	42100 Gr. 8
B8	60	10.0	6.0	0.6	42100 Gr. 12

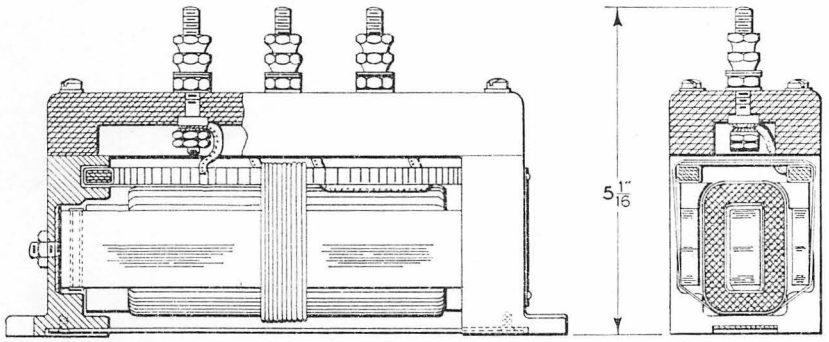
Adjustable Track Reactors (Size 2)

Fig. No.	Frequency	Normal Current	Volts	Impedance	Drawing Reference
C	25	15.0	7.5	.2–.3–.4–.5	42100–2 Gr. 1
C1	60	10.0	38.5	3.85	42100–2 Gr. 2
C2	60	25.0	12.5	.2–.3–.4–.5	42100–2 Gr. 3
C3	100	15.0	30.0	.9–1.3–1.8–2	42100–2 Gr. 4

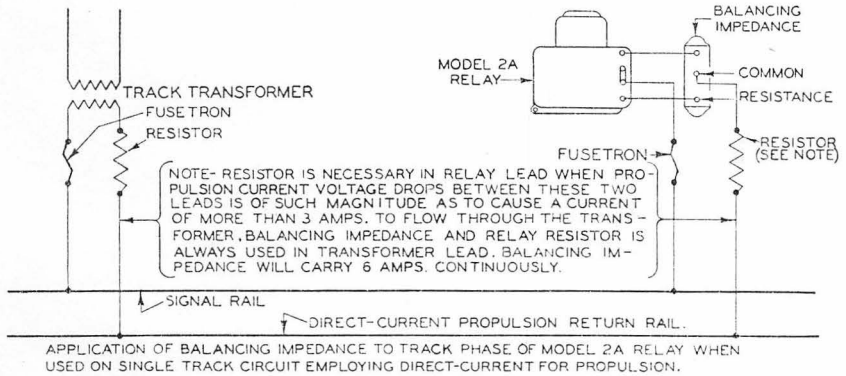
Memoranda

PLATE E1141





A-BALANCING IMPEDANCE



APPLICATION OF BALANCING IMPEDANCE TO TRACK PHASE OF MODEL 2A RELAY WHEN USED ON SINGLE TRACK CIRCUIT EMPLOYING DIRECT-CURRENT FOR PROPULSION.

Balancing Impedance

November 1954 GENERAL RAILWAY SIGNAL COMPANY

Balancing Impedance

Supersedes Plate N1313

Note: Balancing Impedance as shown on opposite page is designed for use in connection with Model 2A Relays when used for single rail track circuits on Electric Traction Lines employing direct-current for propulsion. The combination of this balancing impedance and two track windings on the relay neutralizes the magnetic effect due to the direct-current flowing through these track windings.

When the propulsion current voltage drop in a length of rail equal to the length of the track circuit involved, is of such a magnitude as to cause a current of more than 3 amperes to flow through the transformer, balancing impedance and relay, it is necessary to use a resistance unit in series with the track leads at both ends of the track circuit to limit this current. See opposite page for application.

When it is desired to duplicate a balancing impedance or when ordering repair parts, always refer to name plate of impedance in question and give drawing number and other data shown thereon.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Balancing Impedance Complete as shown, 25 or 60 cycle.....	42960–1 Gr. 1

Memoranda